

Appendix C

Accident Report Forms and Procedures

DA Form 285-AB

Table of Contents

All accidents	1
On-duty accidents	1
Off-duty accidents	1
Combat-accident reporting	2
Forwarding forms	2
Sample DA Form 285-AB-R	3
Detailed instructions for AGAR	5

AGAR

Abbreviated Ground Accident Report

Use and
Preparation



April 1995

DA Form 285-AB; Abbreviated Ground Accident Report (AGAR) is a two-page fill-in-the-block form to be used for ground accidents in accordance with AR 385-40.

Summary of Reporting Requirements and Suspenses

All accidents

All accidents (regardless of accident class or personnel duty status) must be reported to the local safety office and to the immediate commander or supervisor whose operation, personnel, or equipment is involved.

On-duty accidents

■ **Class A & B accidents.** The U.S. Army Safety Center (USASC) must be notified immediately about any on-duty Army ground accident. The information required is on the "Telephonic Notification of Ground Accident" worksheet in AR 385-40. These accidents will not require submission of an AGAR, but they will require followup with a completed DA Form 285 or appropriate Department of Labor form for civilian personnel accidents involving injury.

■ **Class C & D accidents.** All Class C and D accidents will be reported on the AGAR within 30 days of accident occurrence or on appropriate Department of Labor form for civilian personnel injuries. No DA Form 285 will be required. Appropriate additional information may and should be attached to the AGAR when it is forwarded to USASC.

Off-duty accidents

■ **Class A & B accidents.** The U.S. Army Safety Center must be notified immediately about any off-duty Army ground accident. The information required is on the "Telephonic Notification of Ground Accident" worksheet in AR 385-40. These accidents will require followup with a completed AGAR within 30 days of accident occurrence.

■ **Class C & D accidents.** All Class C and D accidents will be reported on the AGAR within 30 days of accident occurrence.

Combat accident reporting

■ All classes of accidents. As long as conditions permit, standard accident investigation and reporting procedures will be followed. When the senior tactical commander determines that the situation, conditions, and/or time does not permit normal investigating and reporting, all accidents (Class A-D) will be reported on the AGAR as soon as time permits, not to exceed 30 days after the accident. Method of transmission should be dictated by available resources. Class A and B initial-notification will be telephonic to USASC or its field representative in the theater of operations.

GROUND ACCIDENTS NOTIFICATION & REPORTING REQUIREMENTS & SUSPENSES *					
ACCIDENT CLASS	PEACETIME			COMBAT ²	
	TELEPHONIC NOTIFICATION WORKSHEET	AGAR	DA FORM 285	TELEPHONIC NOTIFICATION WORKSHEET	AGAR ONLY By Any Means Possible (Message, Electronic, FAX, Phone, Hand Carry, Mail)
ON-DUTY					
A	Immediately ¹	Not Required	IA/CAI - 90 days	Immediately ¹	As Time Permits (Not to Exceed 30 days)
B	Immediately ¹	Not Required	IA/CAI - 90 days	Immediately ¹	As Time Permits (Not to Exceed 30 days)
C	Not Required	Within 30 days	Not Required	Not Required	As Time Permits (Not to Exceed 30 days)
D	Not Required	Within 30 days	Not Required	Not Required	As Time Permits (Not to Exceed 30 days)
OFF-DUTY					
A	Immediately ¹	Within 30 days	Not Required	Immediately ¹	As Time Permits (Not to Exceed 30 days)
B	Immediately ¹	Within 30 days	Not Required	Immediately ¹	As Time Permits (Not to Exceed 30 days)
C	Not Required	Within 30 days	Not Required	Not Required	As Time Permits (Not to Exceed 30 days)
D	Not Required	Within 30 days	Not Required	Not Required	As Time Permits (Not to Exceed 30 days)

NOTE: 1. USASC must be notified IMMEDIATELY by phone at DSN 558-2660/2539/3410 or Commercial (334) 255-2660/2539/3410 or notify USASC Safety Rep forward (during combat).
2. ONLY when the senior tactical commander determines that the situation, conditions, and/or time does not permit normal peacetime investigating and reporting.

* Army civilian injury only accidents should be reported on appropriate Department of Labor (DOL) form IAW AR 385-40.

Forwarding forms

The original of the completed AGAR should be forwarded to USASC. Units should consult their local Safety Office for the proper routing of these reports in their commands. The AGAR may be transmitted to USASC electronically, by message, by mail, or hand-delivered. When time-sensitive safety-of-use issues are involved, the AGAR can be telefaxed to USASC (334-255-2266, DSN 558-2266). Reports forwarded to USASC may also be sent by—

■ Mail: Commander, U.S. Army Safety Center, ATTN: CSSC-Z,
Building 4905, 1209 5th Avenue
Fort Rucker, AL 36362-5363

■ Message: CDR USASC FT RUCKER AL //CSSC-Z//
Points of contact for questions or help in completing this form are available at your local Safety Office or at USASC (334-255-9119/3437/2001, DSN 588-9119/3437/2001)

U.S. ARMY ABBREVIATED GROUND ACCIDENT REPORT (AGAR)
 For use of this form, see AR 385-40 and DA Pamphlet 385-40; the proponent agency is OCSA

REQUIREMENT CONTROL SYMBOL
 CSOCS-308

1. TIME & DATE OF ACCIDENT a. Yr 94 b. Mth 01 c. Day 21 d. Time 2330 2. PERIOD OF DAY Day X Night 3. ACDT CLASS A 4. ACDT OCCURRED DURING: Combat X Non-Combat X
 5. UNIT IDENTIFICATION a. UIC (6-digit Code) WABCCO b. Name of Unit Co C, 3d Bn, 6th AR c. Unit's Branch AR d. MACOM CCOCM

6. LOCATION OF ACCIDENT a. Exact Location (Detailed enough to locate site) Interstate 10, near Tepeetown, WA, at mile marker 101 b. Type Location B3
 c. State/Country WA d. X Off Post On Post Name: 7. EXPLOSIVES/AMMO a. Present Yes X No b. Involved Yes X No c. METL Task? Yes X No

8. MISSION a. Briefly describe the mission Off Duty

9. VEHICLE/EQUIPMENT/MATERIEL INVOLVED

a. Type of Item (Nomenclature)	b. Model #	c. Ownership	d. Estimated Cost of Damage	e. Vehicle Collision	f. Failure Mode	g. Part Nomenclature	h. Part #	i. Part NSN	j. Part Manufacturer Code	k. EIR/QDR Submitted
#1 1993 Chev	Camero	POV	\$14,000.00	7,5	07	Tire, Radial	Unk	Unk	Unk	Yes X No
#2										Yes X No

10. WHY DID THE MATERIEL FAIL/MALFUNCTION? (Check the root cause(s) in Block e. In Block b, explain how the root cause(s) led to the materiel failure/malfunction.)
 Left front tire failed because of a defective spot in the tire wall.

11. NAME (Last, First, MI) (include Address & UIC if different than Blks 6a & b)
 DRIVER, RICK L.

12. SOCIAL SECURITY # 333-44-5656

13. PERSONNEL CLASSIFICATION a 14. MOS 88M10 15. DUTY STATUS On-duty X Off-duty X

16. AGE 21 17. SEX M 18. PAY GRADE E3 19. FLIGHT STATUS Yes X No

20. MOST SEVERE INJURY (See Instructions) a. Degree a b. Type 1 c. Body Part d d. Cause a

21. DAYS HOSPITALIZED

22. WORKDAYS

a. Lost

b. Restricted

23. CODE p

24. SPECIFIC DESCRIPTION OF ACTIVITY/TASK
 Operating a POV on an Interstate Highway.

25. PERSONAL PROTECTIVE EQUIP

a. Required Yes X No

b. Type of equip #1 a #2

c. Available #1 YES #2

d. Used #1 NO #2

26. ALCOHOL/DRUGS CAUSED/CONT Yes X No Unk

27. EQUIP THIS PERSON WAS ASSOCIATED WITH? (Enter Item No. from Blk 9a) #1

28. LICENSED TO OPERATE EQUIP Yes X No

29. HRS ON DUTY NA

30. HRS SLEEP 6

31. TACTICAL TRAINING Yes X No

32. TYPE TRAINING FACILITY

33. LAST TRAINING

34. FIELD TRAINING EXERCISE Yes No

35. NIGHT VISION SYSTEM USED Yes No

36. DID INDIVIDUAL MAKE A MISTAKE THAT CAUSED/CONTRIBUTED TO ACCIDENT? In Blk a., indicate if individual made a mistake. If yes provide the code (from instructions) in Blk b. and describe in Blk c.

a. Mistake Yes X No

b. Code 40

c. Tell what the mistake was and how it caused/contributed to the accident The driver was exceeding the posted speed limit of 65 mph, and was unable to control the vehicle, when the left front tire blew out.

WHY WAS THE MISTAKE MADE (ROOT CAUSE) (Check the root cause(s) in Box a. In Box b. tell how the root cause(s) led to the mistake.)

LEADER		TRAINING		STDS/PROCEDURES			SUPPORT			INDIVIDUAL		
(Not ready, willing to enforce standards)		(Insufficient in Content/Amount)		(Not clear/Not practical)			(Shortcomings in type, capability, amount or condition of equip/supplies/services/facilities)			(Mistake due to own personnel/factors)		
Direct Supervision	School	AR	SOP	Equip/Material improperly designed	Inadequate Manufacture	Poor/Bad attitude	Fatigue	Overconfident	Alcohol, Drugs	Overconfident	Alcohol, Drugs	
Unit Command Supervision	Unit	TM	Other	Equip/Material not provided	Inadequate Maintenance							
Higher Command Supervision	Experience, OJT	FM	None exists	Inadequate Facilities/Services	Other							

37. Describe root cause(s) (reason) and tell how (if they caused the mistake) The driver was overconfident in his ability to control the vehicle at a high rate of speed, because he frequently exceeded 80 mph, while driving on the interstate, with no difficulties or accidents.

38. ENVIRONMENTAL CONDITIONS

a. Present: Yes No Unk

#1 A B C D E

#2 Yes No Unk

#3 Yes No Unk

b. Caused/Contributed?

39. PROVIDE BRIEF SYNOPSIS OF ACDT (Use additional sheets if required) (Explain sequence of events, tell how and if happened.)

The 1993 Chevrolet Camero was traveling west on I-10, at a high rate of speed (approximately 80 mph), near the Tepeetown, Washington, exit, at mile marker 101, when the left front tire blew out. The vehicle veered sharply to the left and struck the median guardrail, then flipped end over end into the opposing traffic lane, coming to rest inverted. The driver received fatal injuries and the vehicle was extensively damaged.

40. CORRECTIVE ACTIONS(S) TAKEN OR PLANNED

Inform assigned personnel of the facts and circumstances surrounding this accident, with emphasis on obeying traffic laws.

POINT OF CONTACT FOR INFORMATION ON THE ACCIDENT

41. b. Telephone # DSN: 222-3444 COM: (201) 774-3444

a. Name (Last, First, MI) b. Date

ADVISOR, ROBERT A. 940208

42. COMMAND REVIEW a. Name RICHARD F. FOREMAN 43. SAFETY OFFICE REVIEW

b. Signature *Richard F. Foreman* e. Name JOHN D. SAFEMAN

d. Date 940210

Detailed instructions for AGAR

Type or print all entries. Continue on blank sheets of paper if necessary, indicating the date of the accident, the unit/activity accountable for the accident, and the blocks being continued.

For accidents involving more than one person, the entire form will be completed on the most responsible reportable person. An additional AGAR with Blocks 1, 5, and 11 through 37 will be completed for each additional person involved in the accident. "Involved" means any person who was injured or who took actions or made decisions that caused or contributed to the accident. Witnesses and uninjured passengers are not considered involved unless their actions caused and/or contributed to the accident.

The following instructions for block completion are keyed to block numbers.

Block 1. Enter the year, month, and day of the accident. Also enter the local time of the accident.

Block 2. Check the block that best describes when the accident occurred (day or night). Day is from first light to full night (dark). Night is from full dark (full night) to first light.

Block 3. Enter your estimate of the accident's classification: A, B, C, or D

Accident/Incident Classification Criteria

Class A Accident. The resulting total cost of reportable damage is \$1,000,000 or more, an Army aircraft, missile, or spacecraft is destroyed, or an injury and/or occupational illness results in a fatality or permanent total disability.

Class B Accident. The resulting total cost of reportable property damage is \$200,000 or more but less than \$1,000,000, an injury and/or occupational illness results in permanent partial disability, or five or more personnel are inpatient hospitalized.

Class C Accident. The resulting total cost of property damage is \$10,000 or

more but less than \$200,000, a nonfatal injury causes any loss of time from work beyond the day or shift on which it occurred, or a nonfatal illness or disability causes loss of time from work or disability at any time (lost-time case).

Class D Accident. The resulting total cost of property damage is \$2,000 or more but less than \$10,000 (injuries that do not meet the criteria are not required to be reported to USASC).

Block 4. Check the appropriate box. See AR 385-40's glossary for the definition of a combat accident.

Block 5. Enter the unit or activity accountable for this accident. Also, enter the abbreviation of the unit's branch (branch of the Army with which unit is affiliated) from the list below.

NOTE: If accident was caused solely by materiel failure or environmental factors, enter the unit or activity experiencing the accident.

AG Adjutant General's Corps
AD Air Defense Artillery
AR Armor
SP Army Medical Specialist Corps
AN Army Nurse Corps
AV Aviation
CH Chaplain
CM Chemical
DC Dental Corps
EN Engineers
FA Field Artillery
FI Finance Corps
IN Infantry
JA Judge Advocate General's Corps
MC Medical Corps
MS Medical Service Corps
MI Military Intelligence
MP Military Police
OD Ordnance
PA Public Affairs
QM Quartermaster Corps
SC Signal Corps
SF Special Forces
TC Transportation Corps
VC Veterinary Corps

Block 6a. Enter the exact location of the accident (e.g., building number, street name and

number, distance from nearest landmark, etc.).
Block 6b. Enter one code from the list below
for the primary function of the accident location.

Maintenance/fabrication facility

- A1 Vehicle facility (motor pool, maintenance shop)
- A2 Aircraft facility (hangar)
- A3 Vessel facility (boat overhaul/rebuild facility)
- A4 Engineer facility (carpentry/electrical/plumbing shop)
- A5 Other maintenance facility

Travel ways

- B1 Pedestrian way (sidewalk)
- B2 Vehicle trail (tank trail)
- B3 Roadway (street, curb, shoulder, driveway)
- B4 Parking lot
- B5 Aircraft way (flight line, runway)
- B6 Railroad

Other operational facilities/areas

- C1 Office building
- C2 Communications facility
- C3 Construction site
- C4 Security/law-enforcement facility
- C5 Bridge
- C6 Dam
- C7 Navigation locks
- C8 Barge
- C9 Dredge
- C10 Floating plant
- C11 Vessel (not elsewhere coded)
- C12 ARNG/Reserve armory

Training areas

- D1 Range—small arms/individual weapons
- D2 Range—crew-served weapons
- D3 Range—aerial firing/bombing
- D4 Range—infiltration course
- D5 Dedicated nonfiring training area (obstacle/confidence course, parachute drop zone, landing zone, stagefield)
- D6 Temporary training area (unit assembly area, bivouac area)
- D7 Range—EOD

Service facilities

- E1 Library

- E2 Chapel/church
- E3 Child-care center
- E4 Post office
- E5 Laboratory
- E6 Medical care facility
- E7 Fire station
- E8 Commissary
- E9 Post exchange
- E10 Dining facilities
- E11 Post exchange, service station, gas station
- E12 Museum
- E13 Animal-care facility
- E14 Refuse disposal area
- E15 Laundry/cleaning facility

Terrain and water locations

- F1 Sloped terrain (ditch, mountain)
- F2 Wooded terrain (forest, swamp, marsh)
- F3 Open terrain (field, desert)
- F4 Moving bodies of water (creek, stream, river)
- F5 Standing bodies of water (pond, lake, ocean)
- F6 Lake shore/beach Storage facilities
- G1 Storage buildings (ammunition bunker, warehouse, barn, storage shed)
- G2 Outside storage area (POL dump, property disposal area)

Plants and factories

- H1 Heating plant
- H2 Printing plant
- H3 Electric generating plant (includes power substations)
- H4 Ammunition/weapons manufacturing plant
- H5 Other industrial plants and factories

Recreation/entertainment facilities

- I1 Indoor facilities (bowling alley, gym, movie theater, swimming pool)
- I2 Outdoor facilities (playing fields, golf course, swimming pool)

Housing facilities

- J1 Family housing
- J2 Individual housing (BOQ, barracks, rooms)

Freight and passenger terminals

- K1 Airport/airfield (includes control tower)
- K2 Rail station/yard
- K3 Port/dock/wharf
- K4 Vehicle terminal (bus station, truck terminal)

School facilities

- L1 Kindergarten through grade 12)
- L2 Army-operated technical/occupational training facilities/classrooms (aviation/maintenance school)
- L3 Non-Army-operated technical/occupational training facilities/classrooms (university/college classes)

Hobby shop

- M1 Auto hobby shop
- M2 Woodworking hobby shop
- M3 Other hobby shop

Block 6c. Enter the name of the state or country in which the accident occurred.

Block 6d. Indicate whether the accident occurred on- or off-post; if on-post, enter the name of the installation/activity.

Block 7a. Check yes if explosives, ammunition, or pyrotechnics were PRESENT.

Block 7b. Check yes if explosives, ammunition, or pyrotechnics were INVOLVED.

Block 8a. Briefly describe the mission the individual or unit was conducting at the time of the accident. If off duty, so state.

Block 8b. Was the task a METL task? Check the appropriate box.

Block 9. "Involved" means vehicle/ equipment/materiel/property that is damaged, whose use or misuse contributed to the accident, or whose materiel failure/malfunction caused or contributed to the accident. Include Army and non-Army equipment/materiel. Use one line for each piece of equipment or item and enter the requested information. Continue on blank paper if necessary.

Block 9a. Enter the name of the equip-

ment/materiel involved.

Block 9b. Enter the equipment model.

Block 9c. Indicate who owns the vehicle/equipment/materiel (e.g., DOD, DA, unit, person).

Block 9d. Enter your estimate of the damage cost for the piece of equipment listed in block 9a.

Block 9e. From the list below, select the type(s) of collision in which this property/materiel was involved. More than one collision type might be appropriate for the property/materiel. If so, enter up to three in the space provided. If "Other" is selected, specify the type of collision in the space provided. If no collision was involved, leave blank.

- 1 = Going forward and collided with moving vehicle
- 2 = Going forward and collided with parked vehicle
- 3 = Collision while backing
- 4 = Collision with pedestrian
- 5 = Collision with object other than vehicle/pedestrian
- 6 = Overturned
- 7 = Ran off road
- 8 = Jackknifed
- 9 = Going forward and rear-ended moving vehicle
- 10 = Going forward and rear-ended stopped vehicle
- 11 = Collision while turning
- 12 = Other (specify)

NOTE: If the item in block 9a experienced a materiel failure or malfunction that caused or contributed to the accident, complete blocks 9f-9k and block 10. If not, skip to block 11.

Block 9f. Enter the code from the list below that indicates how the component or part failed or malfunctioned (mode of failure). Explanations of these codes are contained appendix B of DA Pam 385-40.

- 01 Overheated/burned/melted. (Key words: blister, boil, carbonize, char, flame, fuse, glaze)
- 02 Froze (temperature). (Key words: congeal, solidify)

- 03 Obstructed/pinched/clogged. (Key words: block, crimp, restrict)
- 04 Vibrated. (Key words: oscillate, shake)
- 05 Rubbed/worn/frayed. (Key words: abrade, chafe, fret, groove, score, scrape)
- 06 Corroded/rusted/pitted. (Key words: erode, oxidize)
- 07 Overpressured/burst. (Key words: balloon, bulge, explode, rupture, swell)
- 08 Pulled/stretched. (Key word: elongate)
- 09 Twisted/torqued. (Key word: turn)
- 10 Compressed/hit/punctured. (Key words: chip, collapse, crush, dent, nick, pinch, press)
- 11 Bent/warped. (Key words: bow, buckle)
- 12 Sheared/cut. (Key words: chop, sever)
- 13 Decayed/decomposed. (Key words: mildew, rot, spoil)
- 14 Electric current action. (Key words: short, arc, fusing, grounding, amperage, voltage, surge)
- 97 Insufficient data to determine mode of failure.

Block 10. Materiel failures/malfunctions can be caused by shortcomings of leaders, standards/procedures, or support:

Leader failure: Standards/procedures are known but are not enforced.

Standards failure: Standards/procedures are not clear/practical or do not exist (e.g., AR, TM, FM, SOP, etc.).

Support failure: Shortcomings in type, capability, amount, or condition of equipment, supplies, services, or facilities (equipment/materiel not provided or improperly designed, inadequate manufacture or maintenance, or inadequate facilities/services); shortcomings in personnel by quantity or qualifications.

Block 10a. Determine the underlying reason (root cause) the materiel failed or malfunctioned and check the block accordingly (see appendix B of DA Pam 385-40 for an explanation of code terms).

Block 10b. Describe how the materiel failed or malfunctioned and explain why (explain mode of failure from block 9f and root cause from block 10a).

Block 11. Enter the last name, first name, and middle initial of involved person. Also enter the UIC if it is different from that entered in block 5a.

Block 12. Enter the SSN of the individual listed in block 11.

Block 13. Enter the code from the list below for the classification (at the time of the accident) of the person listed in block 11. Enter only ONE code.

- a= Active Army
- b= Army civilian
- c= Army contractor
- d= Nonappropriated fund
- e= Other U.S. military
- f= ROTC
- g= Dependent
- h= NGB technician
- i= NGB IDT
- j= NGB AT
- k= NGB ADSW
- l= NGB AGR
- m= NGB ADT
- n= USAR IDT
- o= USAR AT
- p= USAR ADT
- q= USAR FTM
- r= Foreign Nat'l Direct Hire
- s= Foreign Nat'l Indirect Hire
- t= Foreign Nat'l KATUSA
- u= Foreign Nat'l attached to U.S. Army
- v= Public
- w= Not reported

Block 14. Enter the MOS or job series of the individual listed in block 11.

Block 15. Check the appropriate box to reflect the duty status at the time of the accident of the individual listed in block 11.

Block 16. Enter the age of the individual listed in block 11.

Block 17. Enter "M" for male or "F" for female.

Block 18. Enter the rank/pay grade for the individual listed in block 11 (e.g., E5, O3, GS-1, WG-8).

Block 19. Check the appropriate box (for government personnel only) to indicate the military flight status of the individual listed in block 11.

Block 20a. Enter the code that indicates the severity of the injury to the individual. If more than one applies, enter the *most severe*. See AR 385-40 for definitions of the following.

- a = Fatal
- b = Permanent total disability
- c = Permanent partial disability
- d = Days away from work
- e = Restricted work activity
- f = First aid only
- g = No injury

Block 20b. Enter the code that best describes this person's *most serious* injury type.

- NA= None (not applicable)
- a= Burns (chemical)
- b= Burns (thermal)
- c= Amputation
- d= Decompression sickness
- e= Asphyxiation (suffocation)
- f= Fractures
- g= Dislocation
- h= Abrasions
- i= Concussion
- j= Sprain/strain
- k= Cuts/lacerations
- l= contusion
- m= Puncture wound
- n= Hernia, rupture
- o= Frostbite
- p= Heatstroke
- q= Heat exhaustion
- r= Noise injury/illness
- s= Other (specify)

Block 20c. Enter the code that best describes the *most seriously injured* part of this person's body. (Body part entered here should be the one with the injury indicated in previous block.)

- NA= None/not applicable
- a= Body (general, cannot specify)
- b= Head
- c= Forehead
- d= Eyes
- e= Nose
- f= Jaw
- g= Neck
- h= Trunk
- i= Chest
- j= Heart
- k= Back
- l= Shoulder
- m= Arm
- n= Wrist
- o= Hand
- p= Fingers
- q= Leg
- r= Knee
- s= Ankle
- t= Foot
- u= Toes
- v= Other

Block 20d. Enter the code that best describes the cause of the *most serious* injury to this individual (the event that resulted in the injury/illness).

- NA= None/not applicable
- a= Struck against
- b= Struck by
- c= Fell from elevation
- d= Fell from same level
- e= Caught in/under/between
- f= Rubbed/abraded
- g= Bodily reaction
- h= Overexertion
- i= Exposure
- j= External contact
- k= Ingested
- l= Inhaled
- m= Thrown from

Block 21. Enter the estimated or actual total number of days this individual will be hospitalized (inpatient/admitted) receiving treatment. Days hospitalized for "observation only" are not included.

Block 22a. Enter the estimated or actual

number of days this individual will be away from work (totally unable to perform any work, on bed rest/quarters). Workdays lost does not include days hospitalized or the day of injury.

Block 22b. Enter the estimated or actual number of workdays the individual will not be able to perform all of his or her regular duties AFTER going back to work (light duty/profile).

Block 23. Enter the code from the list below that best describes the individual's activity at the time of the accident. Enter only one code. If the person was engaged in more than one activity at the time of the accident, check the one most relevant to the cause of the accident. See DA Pam 385-40 Glossary for explanation of activity codes.

- a= Soldiering
- b= Combat soldiering
- c= Physical training
- d= Weapons handling
- e= Engineering or construction
- f= Communications
- g= Security/law enforcement
- h= Firefighting
- i= Patient care
- j= Test/study/experiments
- k= Educational
- l= Information and art
- m= Food & drug inspection
- n= Laundry/dry cleaning
- o= Pest/plant control
- p= Operating vehicle/vessel
- q= Handling animal
- r= Maintenance/repair/servicing
- s= Fabricating
- t= Handling materiel/passengers
- u= Janitorial/housekeeping, etc.
- v= Food/drink preparation
- w= Supervisory
- x= Office
- y= Counseling/advisory
- z= Sports
- aa= Hobbies
- bb= Passenger
- cc= Human movement
- dd= Horseplay
- ee= Bystanding/spectating

- ff= Personal hygiene/eating/sleeping
- gg= Parachuting

Block 24. Enter a concise description of the individual's activity/task at the time of the accident.

Block 25a. Check YES or NO to indicate whether any personal protective clothing or equipment was required for the activity/task being performed by this individual. If YES, complete blocks 25b-d. If NO, skip to block 26.

Block 25b. Enter the code for the type of equipment that was required.

- a= Seatbelt
- b= Helmet
- c= Goggles/glasses
- d= Gloves
- e= Earplugs
- f= Other (specify)

Blocks 25c & d. If protective clothing and equipment was required, determine if it was available and used, available but not used, or not available. Then, enter YES or NO in the appropriate blocks to indicate the item's availability (block 25c) and use or nonuse (block 25d).

Block 26. Check the appropriate box to indicate whether or not alcohol/drugs caused or contributed to the accident.

Block 27. Enter the item number (e.g., #1, #2) from block 9a that indicates which piece of equipment this individual was associated with.

Block 28. If this individual was operating a vehicle or equipment (at the time of the accident) that required a license to operate, indicate if the individual had such a license (up-to-date). If no license was required or no equipment was being operated, skip to block 29.

Block 29. Enter the number of continuous hours (without sleep) this individual was on duty before the accident.

Block 30. Enter the number of hours of sleep (cumulative) this individual had in the past 24 hours.

Block 31. Indicate whether the activity listed in blocks 23 and 24 was part of tactical training (training in field environment that uses or develops combat or combat support skills (see note below).

NOTE: For this report, the following definitions apply:

Tactical training = Training (in a field environment) that uses or develops combat or combat support skills.

Field exercise and tactical training = Begins when the individual reports to his or her primary duty location for movement to the field site and ends when he or she arrives back at the primary duty location from the field.

Block 32. If the individual was participating in any type of training, enter the code for the type of training facility being used (see FM 25-2 for definitions). (If not applicable, leave blank.)

- a= Garrison
- b= Local training area
- c= Major training area
- d= NTC
- e= JRTC
- f= CMTC
- g= Standard range facility/live fire
- h= Other (specify)

Block 33. For the activity specified in blocks 23 and 24, enter the number of months since the last time the individual received training before the accident.

Block 34. Check the appropriate box to indicate whether the individual was on a command designated field training exercise (FTX). Indicate the name of the exercise, if it has a name (e.g., Team Spirit, REFORGER, Gallant Eagle). Check NO if the individual was not participating in a field training exercise.

Block 35. Indicate if night vision systems (de-

vices) were being used by this individual at the time of the accident (e.g., night vision goggles, AN/PVS-5-A). If used, specify the type. If they caused or contributed to the accident, explain in block 39.

Block 36a. *In your opinion*, did this individual make a mistake that caused and/or contributed to the accident? If the answer is YES, complete blocks 36b & c and block 37. If NO, skip to block 38.

Block 36b. Enter the code from the list below that best indicates the type of mistake made by this individual. See DA Pam 385-40, appendix B for explanation and examples of the mistake/error codes.

General mistakes/errors

- 01 Inadequate planning.
- 02 Failed to lock, block, or secure; e.g., load.
- 03 Inadequate inspection or check of vehicle or equipment.
- 04 Failed to use required safety equipment, device, guard, sign, or signal.
- 05 Operating while fatigued when not necessary or directed.
- 06 Improper use of equipment.
- 07 Improper lifting.
- 08 Failed to take appropriate precautions for adverse environmental conditions (rain, haze, fog, snow, ice, reduced visibility).
- 09 Improper body position.
- 10 Improperly walked, ran, or climbed.
- 11 Failed to stay alert or attentive to what was happening (situational awareness of environment, conditions, and operations).
- 12 Failed to ensure adequate clearance/space (enough room) for operation.
- 13 Misjudged clearance (improperly estimated or evaluated).
- 14 Improper weapons handling.
- 15 Improper handling of pyrotechnics or explosives.
- 16 Incorrectly pulled or pushed equipment or material.
- 17 Failed to firmly grip or hold equipment

- or material.
- 18 Inadequate crew coordination or communication.

(Items 19 through 39 reserved for future use.)

Vehicle/equipment specific

- 40 Excessive speed.
- 41 Improper passing.
- 42 Improper turning.
- 43 Failed to yield right-of-way (other than while turning).
- 44 Failed to stop at controlled intersection.
- 45 Improperly stopped or parked.
- 46 Improper backing.
- 47 Failed to use ground guide when required.
- 48 Ground guide used improper or incorrect position, signal, or procedure.
- 49 Following too close for environmental conditions or vehicle speed/design.
- 50 Driving in wrong lane.
- 51 Improper lane change.
- 52 Improper braking.
- 53 Improperly shifted gears on vehicle or equipment.
- 54 Abrupt control or steering response (except while turning).
- 55 Improperly mounted or dismounted vehicle or equipment.
- 56 Operated vehicle or equipment with known malfunction or unsafe mechanical condition.

(Items 57-74 reserved for future use.)

Supervisor specific

- 75 Improper personnel selection or assignment.
- 76 Knowingly allowed equipment operator to violate procedures.
- 77 Failed to ensure proper positioning of personnel before vehicle equipment operation.
- 78 Failed to inform or brief personnel adequately for mission accomplishment.
- 97 Insufficient information reported to identify mistake or error.

Block 36c. Describe the mistake and how it caused or contributed to the accident. Be specific.

Block 37. Mistakes can be caused by shortcomings of leaders, training, standards/procedures, support, or the individual. Specific causes include:

-Leader failure: Standards or procedures are known but are not enforced.

-Training failure: Standards exist, but school, unit, or on-the-job training or individual experience is insufficient in content or amount.

-Standards failure: Standards or procedures are not clear or practical or do not exist; e.g., AR, TM, FM, SOP, etc.

-Support failure: Shortcomings in type, capability, amount, or condition of equipment, supplies, services, or facilities (equipment or materiel not provided or improperly designed, inadequate manufacture or maintenance, or inadequate facilities or services); personnel by quantity or qualifications.

-Individual failure: Standards are known but are not followed.

Block 37a. Identify why the mistake was made (specific root cause). See appendix B of DA PAM 385-40 for definitions and a list of questions to help determine the readiness shortcoming or root cause responsible for the mistake or error.

Block 37b. Describe the root cause and tell how it caused the mistake.

Block 38. Enter the codes (no more than three) from the list below to indicate the conditions present at the time of the accident. Also indicate whether the condition caused or contributed to the accident by checking the caused/contributed block and, if YES, explaining in block 39.

- A Clear/dry
B Bright/glare
C Dark/dim
D Fog/condensation/frost
E Mist/rain/sleet/hail
F Snow/ice

- G Dust, fumes, gases, smoke, vapors
- H Noise/bang/static
- I Temperature/humidity (cold/heat)
- J Storm, hurricane, tornado
- K Wind/gust/turbulence
- L Vibrate/shimmy/sway/shake
- M Radiation/laser/sunlight
- N Holes/rocky/rough/rutted/uneven
- O Inclined/steep
- P Slippery (not due to precipitation)
- Q Air pressure (bends, hypoxia, decompression, altitude)
- R Lightning/static electricity/grounding
- S Electromagnetic radiation

T Other (specify)

Block 39. Provide a brief synopsis of the accident. Explain the sequence of events. Tell how and why the accident happened.

Block 40. Briefly describe all actions taken, planned, or recommended to eliminate, or at least reduce, the root cause(s) of this accident and prevent similar accidents from happening (see appendix B, DA PAM 385-40 for examples).

Block 41. Individual who can answer questions about this accident.

NOTE: The information and substantiating data required by this publication are the minimum requirements for reporting accidents to USASC on the AGAR. In addition, the preparer should also submit any other documentation deemed appropriate to substantiate the findings and conclusions or to comply with additional chain-of-command reporting requirements.

37. WHY WAS THE MISTAKE MADE (ROOT CAUSE) (Check the root cause(s) in Blk a. In Blk b. tell how the root cause(s) led to the mistake.)

LEADER (Not ready, willing to enforce standards)	TRAINING (Insufficient in Content/Amount)	STDS/PROCEDURES (Not clear/Not practical)			SUPPORT (Shortcomings in type, capability, amount or condition of equip/supplies/services/facilities)			INDIVIDUAL (Mistake due to own personal factors)		
		AR	SOP	Other	Equip/Material Improperly designed	Inadequate Manufacture	Poor/Bad attitude	Fatigue	Overconfident	Alcohol, Drugs
Direct Supervision	School				Equip/Material not provided	Inadequate Maintenance				
Unit Command Supervision	Unit	TM			Inadequate Facilities/Services	Other				
Higher Command Supervision	Experience, OJT	FM	None exists							

b. Describe root cause(s) (reason) and tell how they caused the mistake

38. ENVIRONMENTAL CONDITIONS

a. Present: Yes No Unk

#1

#2

#3

b. Caused/Contributed? Yes No Unk

39. PROVIDE BRIEF SYNOPSIS OF ACDT (Use additional sheets if required) (Explain sequence of events, tell how acct happened.)

40. CORRECTIVE ACTIONS(S) TAKEN OR PLANNED

POINT OF CONTACT FOR INFORMATION ON THE ACCIDENT

41. _____ b. Telephone # _____ DSN: _____ COM: _____

a. Name (Last, First, MI) _____ b. Date _____

42. COMMAND REVIEW a. Name _____ b. Signature _____

43. SAFETY OFFICE REVIEW a. Name _____ b. Date _____

U.S. ARMY ABBREVIATED GROUND ACCIDENT REPORT (AGAR)

For use of this form, see AR 385-40 and DA Pamphlet 385-40; the proponent agency is OCSA

REQUIREMENT CONTROL SYMBOL
CSOCS-308

1. TIME & DATE OF ACCIDENT		a. Yr	b. Mth	c. Day	d. Time	2. PERIOD OF DAY		Day	Night	3. AGDT CLASS	4. ACDT OCCURRED DURING:		Combat	Non-Combat										
5. UNIT IDENTIFICATION		a. UIC (6-digit Code)				b. Name of Unit				o. Unit's Branch														
3. LOCATION OF ACCIDENT		a. Exact Location (Detailed enough to locate site)				d. Off Post				On Post		Name:		7. EXPLOSIVES/ANMO		a. Present	Yes	No	b. Involved	Yes	No	b. METL Task?	Yes	No
c. State/Country		d.																						

8. MISSION a. Briefly describe the mission

9. VEHICLE/EQUIPMENT/MATERIEL INVOLVED

a. Type of Item (Nomenclature)	b. Model #	c. Ownership	d. Estimated Cost of Damage	e. Vehicle Collision	f. Failure Mode	g. Part Nomenclature	h. Part #	i. Part NSN	j. Part Manufacturer Code	k. ER/ODR Submitted
#1										Yes
#2										Yes

10. WHY DID THE MATERIEL FAIL/MALFUNCTION? (Check the root cause(s) in Block e. In Block b, explain how the root cause(s) led to the materiel failure/malfunction and explain why (root cause))

SUPPORT

(Shortcomings in type, capability, amount or condition of equipment/supplies/services/facilities)

LEADER (Not ready, willing to enforce standards)	STDS/PROCEDURES (Not clear, Not practical)
Direct Supervision	AR SOP
Unit Command Supervision	TM Other
Higher Command Supervision	FM None exists
	Inadequate Facilities/Services
	Equip/Materiel Improperly designed
	Equip/Materiel not provided
	Inadequate Maintenance
	Other

11. NAME (Last, First, MI) (include Address & UIC if different than Blks 6a & b.)

12. SOCIAL SECURITY #

13. PERSONNEL CLASSIFICATION

14. MOS

15. DUTY STATUS

16. AGE

17. SEX

18. PAY GRADE

19. FLIGHT STATUS

20. MOST SEVERE INJURY (See Instructions) a. Degree b. Type c. Body Part d. Cause

21. DAYS HOSPITALIZED

22. WORKDAYS

a. Lost

b. Restricted

23. CODE

24. SPECIFIC DESCRIPTION OF ACTIVITY/TASK

25. PERSONAL PROTECTIVE EQUIP

a. Required

b. Type of equip

c. Available

d. Used

26. ALCOHOL/DRUGS CAUSED/CONT

27. EQUIP THIS PERSON WAS ASSOCIATED WITH? (Enter Item No. from Blk 9a)

28. LICENSED TO OPERATE EQUIP

29. HRS ON DUTY

30. HRS SLEEP

31. TACTICAL TRAINING

32. TYPE TRAINING FACILITY

33. LAST TRAINING

34. FIELD TRAINING EXERCISE

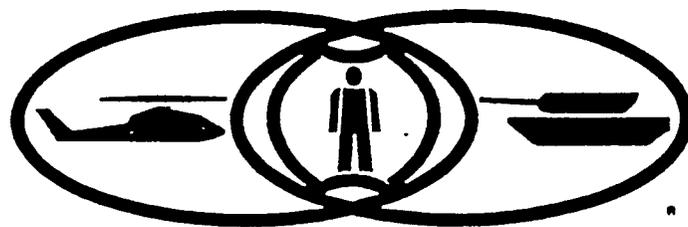
35. NIGHT VISION SYSTEM USED

36. DID INDIVIDUAL MAKE A MISTAKE THAT CAUSED/CONTRIBUTED TO ACCIDENT? In Blk a., indicate if individual made a mistake. If yes provide the code (from Instructions) in Blk b. and describe in Blk c.

a. Mistake

b. Code

c. Tell what the mistake was and how it caused/contributed to the accident



U.S. ARMY SAFETY CENTER

Local reproduction is authorized and encouraged.



Environmental
Science &
Engineering, Inc.

REPORT OF OCCUPATIONAL ACCIDENT, INJURY, OR ILLNESS

OFFICE & DEPARTMENT

DEPT. NO.

CENTER NO.

DATE OF REPORT

INITIAL REPORT

Last Name First Name Initial Home Address (Street, City, State, Zip Code)

Sex Employee No. Social Security No. Birth Date Occupation(Job Title)

Date of Accident Time of Accident Exact Location of Accident

A.M.
 P.M.

Did Accident Occur YES
On ESE Property? NO

Employee's Home Office & Dept. No.

Result of Accident (Check All That Apply): Near Miss Injury Illness

Project No.

Supervisor Name

Project Manager Name

What was employee doing at time of accident? (Be specific. Include information on tools, equipment, materials in use and what employee was doing with them.)*

How did the accident occur?*

INJURY/ILLNESS INFORMATION

Type of Injury or Illness.

Part(s) of Body Affected (Be Specific!)

Object or Substance Responsible for Injury/Illness

Date of Injury or Initial Diagnosis of Illness

Name and Address of Treating Physician

Date Treated

Did Employee Die? YES**
 NO

Was Employee Admitted to
Hospital? YES**
 NO

Treatment Received (Be Specific!)

Name and Address of Hospital

Date Treated

Treatment Received (Be Specific!)

Reported By

Title

Phone No.

*Attach Additional Sheets as Necessary

Please print clearly or type

**Notify Corporate Health & Safety of Death or Hospital Admission Immediately!

8801 North Industrial Road

Peoria, IL 61615

Phone (309) 692-3422

(800) 234-1200

Fax (309) 692-9364

ANALYSIS RESULTS

Detailed description of the accident. State clearly how it happened. Attach separate sheet and photographs/diagrams as appropriate.

Who Was in Charge of Work? _____ Was He/She Present? YES NO What Instructions Were Given? _____

Witnesses* _____ Years Employee Has with ESE _____ Years on Present Job _____ Amount of Experience with Task Being Performed _____

Proper Protective Tools & Equipment in Use? YES NO If Not, Why Not? _____

What Hazardous Condition(s) Contributed to the Accident? Explain Each.* (See Suggestions Below)

What Unsafe Act(s) Caused/Contributed to the Accident? Explain Each.* (See Suggestions Below)

Involved Employee's Recommendation(s) To Prevent a Similar Occurrence.*

What Action(s) Will Be Taken To Prevent a Similar Occurrence? Be Specific.*

Discussed With Employee By _____ Date _____ Involved Employee's Immediate Supervisor's Signature _____

Report Approved By _____

Employee Comments*

Employee Signature _____ Date _____

HAZARDOUS CONDITIONS

- Congested area/
- Insufficient workspace
- Defective apparel
- Defective equipment
- Environmental factor
- Improper apparel
- Improper design
- Improper equipment
- Improper illumination
- Improper ventilation
- Improperly guarded
- Inclement weather
- Lack of proper tools/equipment
- Obscured vision

- Poor housekeeping
- Slick surface
- Special task assignment
- No hazardous condition

UNSAFE ACTS

- Disregard of instructions
- Disregard of safety rules
- Due to vehicular accident
- Failure to use/improper use of protective equipment
- Horserplay
- Improper lifting method
- Improper positioning of self
- Improper operating method

- Improper use of hands or body parts
- Improper use of tools/equipment
- Inattention
- Inexperience
- Lack of communication
- Lack of knowledge/skills
- Lack of proper equipment/tools
- Overestimation of personal capability
- Poor judgement
- Unsafe loading, pulling or mixing
- Unsafe rigging
- Unsafe speed
- Using defective equipment
- Working on moving equipment
- No unsafe act

SITE ACCIDENT/ILLNESS/INCIDENT REPORT PROCEDURE

SITUATION	ACTIONS	RESPONSIBLE PERSONS
<p>1) Accident or near miss not resulting in occupational injury or illness or of a value less than \$1000</p>	<p>a) Complete relevant portions of front of ESE REPORT OF OCCUPATIONAL ACCIDENT, INJURY, OR ILLNESS</p>	<p>ESE Supervisor/Project Manager with assistance of affected employee(s), witnesses, and Subcontractor Supervisor/Project Manager (if incident involves Subcontractor personnel)</p>
	<p>b) Complete analysis and report on reverse of ESE REPORT OF OCCUPATIONAL ACCIDENT, INJURY, OR ILLNESS</p>	<p>Supervisor/Project Manager, affected employee(s) and witnesses with assistance of SHSO and/or LHSR as needed, and Subcontractor Supervisor/Project Manager (if incident involves Subcontractor personnel)</p>
	<p>c) Submit completed ESE REPORT to ESE and Subcontractor Project Managers (or appointed representatives) on same day as incident and to LHSR within 2 working days</p>	<p>Supervisor/Project Manager</p>
	<p>d) Submit photocopies of REPORT to APC and Office/Division Manager within 4 working days</p>	<p>LHSR</p>
<p>2) Accident resulting in occupational injury without lost/restricted work days</p>	<p>Same as above plus e) Notify Workers' Compensation Administrator immediately, and submit photocopy of front of REPORT to Workers' Compensation Administrator as soon as possible</p>	<p>Supervisor/Project Manager</p>
<p>3) Accident resulting in occupational illness or lost/restricted work day injuries</p>	<p>a) Complete relevant portions of front of ESE REPORT OF OCCUPATIONAL ACCIDENT, INJURY, OR ILLNESS form.</p>	<p>Supervisor/Project Manager with assistance of affected employee(s) and witnesses, and Subcontractor Supervisor/Project Manager (if incident involves Subcontractor personnel)</p>
	<p>b) Notify ESE and Subcontractor Project Managers (or their appointed representatives) on same day as incident. Notify LHSR and APC as soon as it is known that employee will not return to work on next work day or is unable to perform regular duties on next regular work day.</p>	<p>Supervisor/Project Manager</p>
	<p>c) Complete analysis and report on reverse of ESE REPORT OF OCCUPATIONAL ACCIDENT, INJURY, OR ILLNESS</p>	<p>LHSR, affected employee(s) and witnesses with assistance of Supervisor/Project Manager and SHSO (SHSO will fill out copy of reverse side of form and send to LHSR) as needed, and Subcontractor Supervisor/Project Manager (if incident involves Subcontractor personnel)</p>
	<p>d) Notify Workers' Compensation Administrator immediately, and submit photocopy of front of REPORT to Workers' Compensation Administrator as soon as possible</p>	<p>Supervisor/Project Manager</p>
<p>4) Accident resulting in 1 or more fatalities, 5 or more employees sent to hospital, or admission to hospital of 1 or more employees</p>	<p>Same as Situation 3 except a) Notify LHSR, APC, and Office/Division Manager immediately</p>	<p>Supervisor/Project Manager</p>

ACCIDENT/ILLNESS/INCIDENT REPORT PROCEDURE

APC - Accident/Illness Prevention Coordinator
ESE - Environmental Science & Engineering, Inc.
LHSR - Local Health & Safety Representative (ESE)
OWCP - Office of Workers Compensation Program
SHSO - Site Health & Safety Officer
SSHSP - Site Specific Health & Safety Program

RELEVANT DEFINITIONS -

Paraphrased from ESEs Corporate Health & Safety Manual:

These terms apply to making a decision on how to react to an accident in the field. ALL incidents or near misses require that you complete the ESE Accident/Illness report form.

LOST TIME CASE - A non-fatal injury that causes a loss of time from work beyond the day that the injury occurred.

LOST WORK DAY - Number of work days beyond the day of injury in which the employee would have worked, but could not because of occupational injury or illness.

NON-RECORDABLE FIRST AID CASE: accident resulting in:

- Treatment only during work hours on date of injury, or
- Treatment only after work hours beyond day of injury.

If treatment beyond what is specified above is needed then it becomes a recordable first aid case.

NON-RECORDABLE INJURY / ACCIDENT: An injury is non-recordable if:

- Property Damage is less than \$1,000 and or
- Treatment is limited to that from a first aid kit and
- Professional Services are not required

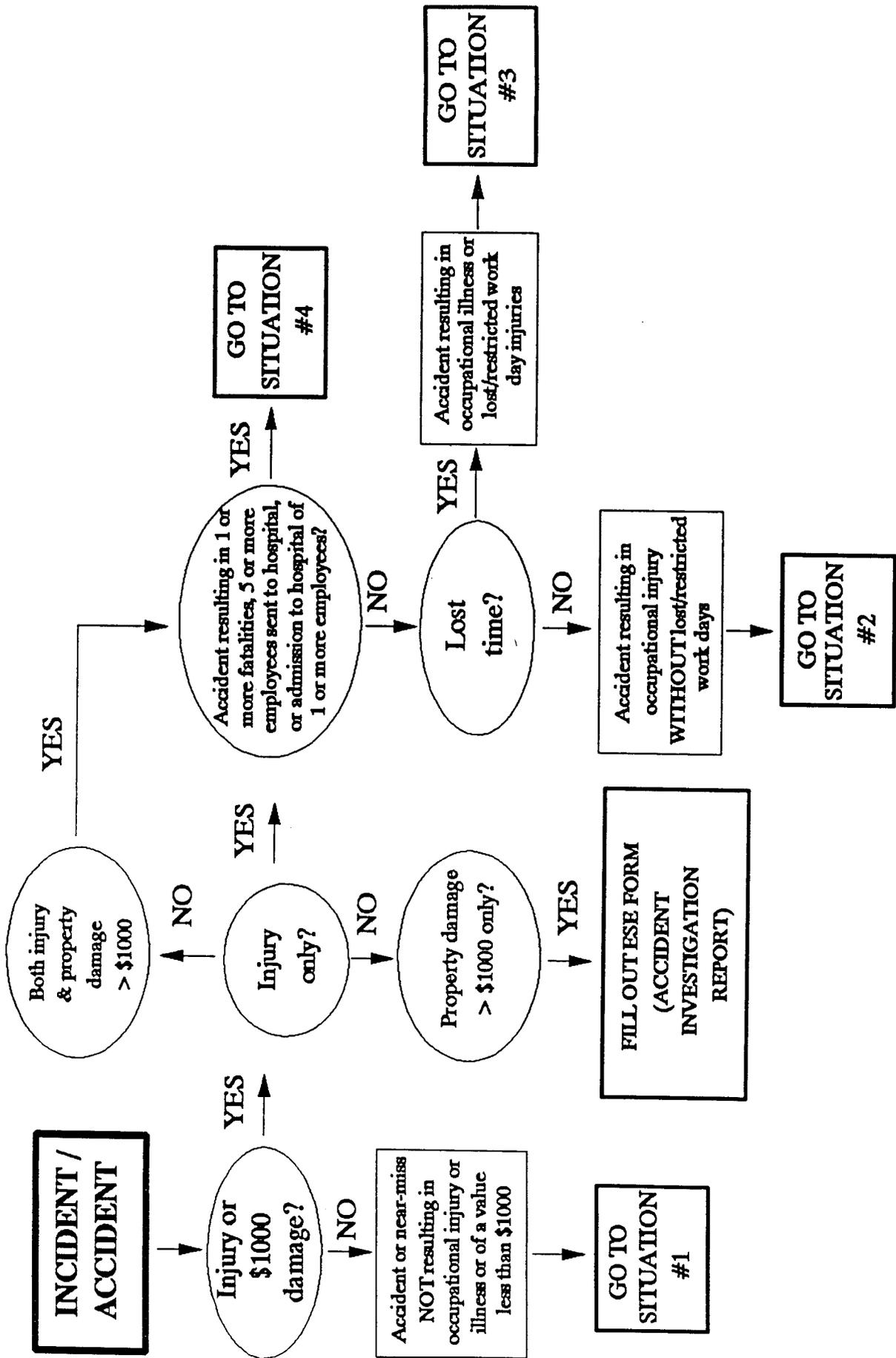
OCCUPATIONAL ILLNESS: Any abnormal physical condition associated with occupational environment (i.e. poison ivy).

OCCUPATIONAL INJURY: Any on-duty injury (beyond basic first aid) caused by conditions in the occupational environment.

RECORDABLE CASE WITHOUT LOST WORKDAYS: accident resulting in one or more of the following:

- Transfer to another job or termination of employment;
- Medical treatment greater than first aid;
- Loss of consciousness;
- Restriction of work or motion; or
- Diagnosis of occupational illnesses (i.e. poison ivy)

RESTRICTION OF WORK - Occurs when part or all of the normal work assignment cannot be performed due to a job related injury or illness. This situation applies to a case where the employee is at work (therefore not a lost workday case) but performing limited duties.



ENVIRONMENTAL SCIENCE & ENGINEERING, INC.
MEMORANDUM
PEORIA, IL

TO: LHSRs and CHOs

FROM: Phil Zerwer
DATE: October 10, 1995
SUBJECT: Employee Chemical
Exposure Incidents

As guidance in the unlikely event of an employee chemical exposure event, please refer to the following procedure:

- 1) If warranted, get the exposed employee to a medical services provider as soon as possible. If a MSDS for the chemical agent is available, take it with the employee to the clinic, hospital, or doctor's office.
- 2) Whether or not the employee was taken to a medical facility, complete the attached "Potential Exposure Report" to the extent possible and call EMR at 1-800-229-3674 as quickly as feasible. Absolutely remember to have the following information when you call EMR -
 - the name of the exposed employee(s), and
 - a phone number where they can reach you and/or the facility treating the employee(s)

EMR will provide a medical evaluation concerning the potential severity of the exposure and can provide guidance to a treating medical facility on the tests and/or treatments that are indicated. It is important to involve EMR because most medical facilities, physicians, nurses, etc. are not occupational medicine specialists and may not really know how to respond to such situations. This might result in excessive, unnecessary, omitted, or even just plain wrong tests or treatments.

- 3) Remember to complete the appropriate internal accident report forms and make any necessary notifications to management in accordance with the Accident/Illness Prevention Program in the Health & Safety Manual.

One additional note, if you witness the exposure event, try to remember if a symptomatic employee was smoking in the period just preceding the onset of symptoms. This could indicate the potential ingestion of a chemical agent via contaminated hands or smoking materials.

Copy this Memo and attached form to all persons that may be called on to assist employees in a chemical exposure situation, such as Field Team Leaders, Site Health & Safety Officers, Emergency Response Team personnel, and possibly lab area or department managers/supervisors.

Potential Exposure Report

Name: _____ Date of Exposure: _____

Social Security No.: _____ Age: _____ Sex: _____

Client Contact: _____ Phone#: _____ Co.: _____

I. Exposing Agent

Name of Product or Chemicals (if known) _____

Characteristics (if the name is not known)

Solid Liquid Gas Fume Mist Vapor

II. Dose Determinants

What was individual doing? _____

How long did individual work in area before signs/symptoms developed? _____

Was protective gear being used? If yes, what was the PPE? _____

Was there skin contact? _____

Was the exposing agent inhaled? _____

Were other persons exposed? If yes, did they experience symptoms? _____

III. Signs and Symptoms (check off appropriate symptoms)

Immediately With Exposure:

Burning of eyes, nose, or throat	Chest tightness/pressure
Tearing	Nausea/vomiting
Headache	Dizziness
Cough	Weakness
Shortness of breath	

Delayed Symptoms:

Weakness	Loss of appetite
Nausea/vomiting	Abdominal pain
Shortness of breath	Headache
Cough	Numbness/tingling

IV. Present Status of Symptoms (check off appropriate symptoms)

Burning of eyes, nose, or throat	Nausea/vomiting
Tearing	Dizziness
Headache	Weakness
Cough	Loss of appetite
Shortness of breath	Abdominal Pain
Chest tightness/pressure	Numbness/tingling
Cyanosis	

Have symptoms: (please check off appropriate response and give duration of symptoms)

Improved _____ Worsened _____ Remained Unchanged _____

V. Treatment of Symptoms (check off appropriate response)

None _____ Self-medicated _____ Physician treated _____

Appendix D

Certification of Task Hazard Assessments

CERTIFICATION OF TASK HAZARD ASSESSMENT

TASK NAME: Surface Water Sampling

DATE: 01/27/98

1.0 Hazard Identification: Items checked are known or anticipated site hazards, or may occur as a result of site operations.

<input checked="" type="checkbox"/> Physical exertion	<input type="checkbox"/> Lifting hazards	<input type="checkbox"/> Confined space
<input checked="" type="checkbox"/> Heat stress	<input type="checkbox"/> Slip, trip or fall	<input type="checkbox"/> Poisonous plants
<input checked="" type="checkbox"/> Cold stress	<input type="checkbox"/> High noise (> 85 dBA)	<input checked="" type="checkbox"/> Poisonous/Hazardous animals
<input type="checkbox"/> Heavy equipment	<input checked="" type="checkbox"/> Overhead utilities	<input type="checkbox"/> Electrical
<input type="checkbox"/> Vehicle traffic	<input type="checkbox"/> Underground utilities	<input type="checkbox"/> Airborne chemical exposure
<input type="checkbox"/> Fire hazards (underline)	<input type="checkbox"/> Intrusive activity (underline)	<input type="checkbox"/> Contam. materials/soil/water
<input type="checkbox"/> Flammable materials	<input type="checkbox"/> Drilling	<input type="checkbox"/> Hand/Power tools
<input type="checkbox"/> Fuel/gas lines	<input type="checkbox"/> Soil excavation	<input type="checkbox"/> UXO/OEW
<input type="checkbox"/> Low lying areas	<input type="checkbox"/> Setting anchors	<input type="checkbox"/> Puncture/Laceration

2.0 Degree of Hazard: Anticipated degree of hazard, based on the hazards associated with this task.

Chemical Hazard:	<input checked="" type="checkbox"/> Low	<input type="checkbox"/> Serious	Physical Hazard:	<input checked="" type="checkbox"/> Low	<input type="checkbox"/> Serious
	<input type="checkbox"/> Moderate	<input type="checkbox"/> Unknown		<input type="checkbox"/> Moderate	<input type="checkbox"/> Unknown

3.0 Control or Protective Measures: The items checked will be used to control or mitigate the above mentioned hazards.

<input checked="" type="checkbox"/> Tailgate Safety Briefing	<input checked="" type="checkbox"/> Personal protective equipment	<input type="checkbox"/> Decontamination
<input type="checkbox"/> Specialized Training	<input type="checkbox"/> Air Monitoring	<input type="checkbox"/> Magnetometer Survey
<input checked="" type="checkbox"/> Safe Work Practices	<input checked="" type="checkbox"/> Site Control Zones	

Engineering Controls (List):

Applicable Programs (List): Heat/Cold Stress, UCEP, the HASP

Other (List):

4.0 Task PPE: PPE has been assigned based on the potential for exposure as identified by this hazard assessment.

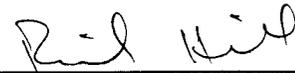
Level of Protection	<input type="checkbox"/> A <input type="checkbox"/> B	<input type="checkbox"/> C <input checked="" type="checkbox"/> D	<input type="checkbox"/> Modified
Respiratory Protection	<input type="checkbox"/> SCBA <input type="checkbox"/> Escape SCBA - Size	<input type="checkbox"/> Fullface respirator <input type="checkbox"/> 1/2 Face respirator	<input type="checkbox"/> Cartridge - Type <input checked="" type="checkbox"/> No respirator required
Protective Clothing	<input type="checkbox"/> Fully encapsulating suit <input type="checkbox"/> Standard tyvek	<input type="checkbox"/> Saranex <input type="checkbox"/> PE Tyvek	<input checked="" type="checkbox"/> Company clothing <input type="checkbox"/> Other:
Gloves (specify inner/outer)	<input checked="" type="checkbox"/> Nitrile <input type="checkbox"/> Butyl	<input type="checkbox"/> Neoprene <input type="checkbox"/> Latex	<input type="checkbox"/> Leather <input type="checkbox"/> Cotton
Head/Face/Eye/Ear Protection	<input checked="" type="checkbox"/> Safety glasses <input checked="" type="checkbox"/> Ear plugs/muffs	<input type="checkbox"/> Safety goggles <input type="checkbox"/> Face shield	<input type="checkbox"/> Hard hat <input checked="" type="checkbox"/> Other: Sunscreen
Foot/Leg Protection	<input type="checkbox"/> Leather boots † <input checked="" type="checkbox"/> Steel-toed leather boots	<input type="checkbox"/> Steel foot covers <input type="checkbox"/> Kevlar leg chaps	<input type="checkbox"/> Chemical over boots - Material

5.0 Modifications Required: !! - Safety glasses required if an eye hazard exists; ! - Ear plugs, muffs, or a combination of the two, will be used if noise levels exceed 85 dBA, 8-hour TWA; * - Hard hats required if an overhead hazard exists or when working around heavy equipment; † - Leather boots are adequate unless a toe hazards exist.

6.0 Certification: The PPE and other control methods and procedures to be used in the conduct of this task have been selected as a result of a hazard assessment conducted by individual identified below.

Printed Name: Richard Hill, P.G., LHSR

Signature:



CERTIFICATION OF TASK HAZARD ASSESSMENT

TASK NAME: Groundwater Sampling

DATE: 03/96

1.0 Hazard Identification: Items checked are known or anticipated site hazards, or may occur as a result of site operations.			
<input checked="" type="checkbox"/> Physical exertion <input checked="" type="checkbox"/> Heat stress <input checked="" type="checkbox"/> Cold stress <input type="checkbox"/> Heavy equipment <input checked="" type="checkbox"/> Vehicle traffic <input checked="" type="checkbox"/> Fire hazards (underline) <input checked="" type="checkbox"/> <u>Flammable Materials (CalGas)</u> <input type="checkbox"/> Fuel/gas lines <input type="checkbox"/> Low lying areas	<input checked="" type="checkbox"/> Lifting hazards <input checked="" type="checkbox"/> Slip, trip or fall <input type="checkbox"/> High noise (>85 dBA) <input type="checkbox"/> Overhead utilities <input checked="" type="checkbox"/> Underground utilities <input type="checkbox"/> Intrusive activity (underline) <input type="checkbox"/> Drilling <input type="checkbox"/> Soil excavation <input type="checkbox"/> Septic Tank Lid Removal	<input type="checkbox"/> Confined space <input type="checkbox"/> Poisonous plants <input type="checkbox"/> Poisonous/Hazardous animals <input checked="" type="checkbox"/> Electrical <input checked="" type="checkbox"/> Airborne chemical exposure <input checked="" type="checkbox"/> Contaminated materials/soil/water <input type="checkbox"/> Hand/Power tools <input type="checkbox"/> UXO/OEW <input type="checkbox"/> Puncture / Laceration	
2.0 Degree of Hazard: Anticipated degree of hazard, based on the hazards associated with this task.			
Chemical Hazard: <input checked="" type="checkbox"/> Low <input type="checkbox"/> Serious <input type="checkbox"/> Moderate <input type="checkbox"/> Unknown		Physical Hazard: <input checked="" type="checkbox"/> Low <input type="checkbox"/> Serious <input type="checkbox"/> Moderate <input type="checkbox"/> Unknown	
3.0 Control or Protective Measures: The items checked will be used to control or mitigate the above mentioned hazards.			
<input checked="" type="checkbox"/> Tailgate Safety Briefing <input type="checkbox"/> Specialized Training <input checked="" type="checkbox"/> Safe Work Practices	<input type="checkbox"/> Personal protective equipment <input checked="" type="checkbox"/> Air Monitoring <input checked="" type="checkbox"/> Site Control Zones	<input checked="" type="checkbox"/> Decontamination <input type="checkbox"/> Magnetometer Survey	
<input type="checkbox"/> Engineering Controls (List):			
<input checked="" type="checkbox"/> Applicable Programs (List): Heat Stress, UCEP, the SSHASP			
<input type="checkbox"/> Other (List):			
4.0 Task PPE: PPE has been assigned based on the potential for exposure as identified by this hazard assessment.			
Level of Protection	<input type="checkbox"/> A <input type="checkbox"/> B	<input type="checkbox"/> C <input checked="" type="checkbox"/> D	<input type="checkbox"/> Modified
Respiratory Protection	<input type="checkbox"/> SCBA <input type="checkbox"/> Escape SCBA - Size	<input type="checkbox"/> Fullface respirator <input type="checkbox"/> ½ Face respirator	<input type="checkbox"/> Cartridge - Type <input checked="" type="checkbox"/> No respirator required
Protective Clothing	<input type="checkbox"/> Fully encapsulating suit <input type="checkbox"/> Standard tyvek	<input type="checkbox"/> Saranex <input type="checkbox"/> PE Tyvek: if sampling becomes messy	<input checked="" type="checkbox"/> Company clothing <input type="checkbox"/> Other:
Gloves (specify inner/outer)	<input checked="" type="checkbox"/> Nitrile <input type="checkbox"/> Butyl	<input type="checkbox"/> Neoprene <input type="checkbox"/> Latex	<input type="checkbox"/> Leather <input type="checkbox"/> Cotton
Head/Face/Eye/Ear Protection	<input checked="" type="checkbox"/> Safety glasses <input checked="" type="checkbox"/> Ear plugs/muffs	<input type="checkbox"/> Safety goggles <input type="checkbox"/> Face shield	<input checked="" type="checkbox"/> Hard hat <input checked="" type="checkbox"/> Other: Sunscreen
Foot/Leg Protection	<input type="checkbox"/> Leather boots <input checked="" type="checkbox"/> Steel-toed leather boots	<input type="checkbox"/> Steel foot covers <input type="checkbox"/> Kevlar leg chaps	<input type="checkbox"/> Chemical over boots - Material
5.0 Modifications Required: !! - Safety glasses required if an eye hazard exists; ! - Ear plugs, muffs, or a combination of the two, will be used if noise levels exceed 85 dBA, 8-hour TWA; * - Hard hats required if an overhead hazard exists or when working around heavy equipment; Steel Toed boots are required on all field sites.			
6.0 Certification: The PPE and other control methods and procedures to be used in the conduct of this task have been selected as a result of a hazard assessment conducted by individual identified below.			
Printed Name: Deborah M. Engquist, LHSR		Signature: 	

Source: ESE

CERTIFICATION OF TASK HAZARD ASSESSMENT

DATE: 03/96

TASK NAME: Drilling

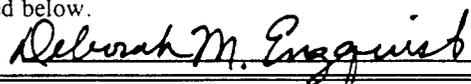
1.0 Hazard Identification: Items checked are known or anticipated site hazards, or may occur as a result of site operations.			
<input checked="" type="checkbox"/> Physical exertion <input checked="" type="checkbox"/> Heat stress <input checked="" type="checkbox"/> Cold stress <input checked="" type="checkbox"/> Heavy equipment <input checked="" type="checkbox"/> Vehicle traffic <input checked="" type="checkbox"/> Fire hazards (underline) <ul style="list-style-type: none"> • <u>Flammable materials</u> • <u>Fuel/gas lines</u> • <u>Low lying areas</u> 	<input checked="" type="checkbox"/> Lifting hazards <input checked="" type="checkbox"/> Slip, trip or fall <input checked="" type="checkbox"/> High noise (>85 dBA) <input checked="" type="checkbox"/> Overhead utilities <input checked="" type="checkbox"/> Underground utilities <input checked="" type="checkbox"/> Intrusive activity (underline) <ul style="list-style-type: none"> • <u>Drilling</u> • Soil excavation • Opening Septic Tanks 	<input type="checkbox"/> Potential Confined space <input checked="" type="checkbox"/> Poisonous plants <input checked="" type="checkbox"/> Poisonous/Hazardous animals <input type="checkbox"/> Electrical <input checked="" type="checkbox"/> Airborne chemical exposure <input checked="" type="checkbox"/> Contam. materials/soil/water <input type="checkbox"/> Hand/Power tools <input type="checkbox"/> UXO/OEW <input checked="" type="checkbox"/> Puncture/Laceration	
2.0 Degree of Hazard: Anticipated degree of hazard, based on the hazards associated with this task.			
Chemical Hazard: <input checked="" type="checkbox"/> Low <input type="checkbox"/> Serious <input type="checkbox"/> Moderate <input type="checkbox"/> Unknown		Physical Hazard: <input type="checkbox"/> Low <input type="checkbox"/> Serious <input checked="" type="checkbox"/> Moderate <input type="checkbox"/> Unknown	
3.0 Control or Protective Measures: The items checked will be used to control or mitigate the above mentioned hazards.			
<input checked="" type="checkbox"/> Tailgate Safety Briefing <input checked="" type="checkbox"/> Specialized Training <input checked="" type="checkbox"/> Safe Work Practices	<input checked="" type="checkbox"/> Personal protective equipment <input checked="" type="checkbox"/> Air Monitoring <input checked="" type="checkbox"/> Site Control Zones	<input checked="" type="checkbox"/> Decontamination <input type="checkbox"/> Magnetometer Survey	
<input type="checkbox"/> Engineering Controls (List): <input checked="" type="checkbox"/> Applicable Programs (List): Heat Stress, Hearing Conservation, the SSHASP <input type="checkbox"/> Other (List):			
4.0 Task PPE: PPE has been assigned based on the potential for exposure as identified by this hazard assessment.			
Level of Protection	<input type="checkbox"/> A <input type="checkbox"/> B	<input type="checkbox"/> C <input checked="" type="checkbox"/> D	<input type="checkbox"/> Modified
Respiratory Protection	<input type="checkbox"/> SCBA <input type="checkbox"/> Escape SCBA - Size	<input type="checkbox"/> Fullface respirator <input type="checkbox"/> ½ Face respirator	<input type="checkbox"/> Cartridge - Type <input checked="" type="checkbox"/> No respirator required
Protective Clothing	<input type="checkbox"/> Fully encapsulating suit <input type="checkbox"/> Standard tyvek	<input type="checkbox"/> Saranex <input type="checkbox"/> PE Tyvek	<input checked="" type="checkbox"/> Company clothing <input type="checkbox"/> Other:
Gloves (specify inner/outer)	<input type="checkbox"/> Nitrile <input type="checkbox"/> Butyl	<input type="checkbox"/> Neoprene <input type="checkbox"/> Latex	<input checked="" type="checkbox"/> Leather <input type="checkbox"/> Cotton
Head/Face/Eye/Ear Protection	<input checked="" type="checkbox"/> Safety glasses <input checked="" type="checkbox"/> Ear plugs/muffs	<input type="checkbox"/> Safety goggles <input type="checkbox"/> Face shield	<input type="checkbox"/> Hard hat <input checked="" type="checkbox"/> Other: Sunscreen
Foot/Leg Protection	<input type="checkbox"/> Leather boots <input checked="" type="checkbox"/> Steel-toed leather boots	<input type="checkbox"/> Steel foot covers <input type="checkbox"/> Kevlar leg chaps	<input type="checkbox"/> Chemical over boots - Material
5.0 Modifications Required: !! - Safety glasses required if an eye hazard exists; ! - Ear plugs, muffs, or a combination of the two, will be used if noise levels exceed 85 dBA, 8-hour TWA, or if any heavy equipment is in use nearby; * - Hard hats required if an overhead hazard exists or when working around heavy equipment.			
6.0 Certification: The PPE and other control methods and procedures to be used in the conduct of this task have been selected as a result of a hazard assessment conducted by individual identified below.			
Printed Name: Deborah M. Engquist, LHSR		Signature:	

Source: ESE

CERTIFICATION OF TASK HAZARD ASSESSMENT

TASK NAME: Soil Sampling (Level D)

DATE: 03/96

1.0 Hazard Identification: Items checked are known or anticipated site hazards, or may occur as a result of site operations.			
<input checked="" type="checkbox"/> Physical exertion <input checked="" type="checkbox"/> Heat stress <input checked="" type="checkbox"/> Cold stress <input type="checkbox"/> Heavy equipment <input type="checkbox"/> Vehicle traffic <input checked="" type="checkbox"/> Fire hazards (underline) <input checked="" type="checkbox"/> <u>Flammable Materials (CalGas0)</u> <input checked="" type="checkbox"/> Fuel/gas lines <input checked="" type="checkbox"/> Low lying areas	<input checked="" type="checkbox"/> Lifting hazards <input checked="" type="checkbox"/> Slip, trip or fall <input type="checkbox"/> High noise (> 85 dBA) <input type="checkbox"/> Overhead utilities <input checked="" type="checkbox"/> Underground utilities <input checked="" type="checkbox"/> Intrusive activity (underline) <input checked="" type="checkbox"/> Drilling <input checked="" type="checkbox"/> <u>Soil excavation</u> <input checked="" type="checkbox"/> Septic Tank Lid Removal	<input type="checkbox"/> Confined space <input checked="" type="checkbox"/> Poisonous plants <input checked="" type="checkbox"/> Poisonous/Hazardous animals <input type="checkbox"/> Electrical <input checked="" type="checkbox"/> Airborne chemical exposure <input checked="" type="checkbox"/> Contaminated materials/soil/water <input type="checkbox"/> Hand/Power tools <input type="checkbox"/> UXO/OEW <input type="checkbox"/> Puncture / Laceration	
2.0 Degree of Hazard: Anticipated degree of hazard, based on the hazards associated with this task.			
Chemical Hazard: <input checked="" type="checkbox"/> Low <input type="checkbox"/> Serious <input type="checkbox"/> Moderate <input type="checkbox"/> Unknown		Physical Hazard: <input checked="" type="checkbox"/> Low <input type="checkbox"/> Serious <input type="checkbox"/> Moderate <input type="checkbox"/> Unknown	
3.0 Control or Protective Measures: The items checked will be used to control or mitigate the above mentioned hazards.			
<input checked="" type="checkbox"/> Tailgate Safety Briefing <input checked="" type="checkbox"/> Specialized Training <input checked="" type="checkbox"/> Safe Work Practices	<input checked="" type="checkbox"/> Personal protective equipment <input checked="" type="checkbox"/> Air Monitoring <input checked="" type="checkbox"/> Site Control Zones	<input checked="" type="checkbox"/> Decontamination <input type="checkbox"/> Magnetometer Survey	
<input type="checkbox"/> Engineering Controls (List):			
<input checked="" type="checkbox"/> Applicable Programs (List): Heat Stress, UCEP, the SSHASP			
<input type="checkbox"/> Other (List):			
4.0 Task PPE: PPE has been assigned based on the potential for exposure as identified by this hazard assessment.			
Level of Protection	<input type="checkbox"/> A <input type="checkbox"/> B	<input type="checkbox"/> C <input checked="" type="checkbox"/> D	<input type="checkbox"/> Modified
Respiratory Protection	<input type="checkbox"/> SCBA <input type="checkbox"/> Escape SCBA - Size	<input type="checkbox"/> Fullface respirator <input type="checkbox"/> ½ Face respirator	<input type="checkbox"/> Cartridge - Type <input checked="" type="checkbox"/> No respirator required
Protective Clothing	<input type="checkbox"/> Fully encapsulating suit <input type="checkbox"/> Standard tyvek	<input type="checkbox"/> Saranex <input type="checkbox"/> PE Tyvek: if sampling becomes messy	<input checked="" type="checkbox"/> Company clothing <input type="checkbox"/> Other:
Gloves (specify inner/outer)	<input checked="" type="checkbox"/> Nitrile <input type="checkbox"/> Butyl	<input type="checkbox"/> Neoprene <input type="checkbox"/> Latex	<input checked="" type="checkbox"/> Leather <input type="checkbox"/> Cotton
Head/Face/Eye/Ear Protection	<input checked="" type="checkbox"/> (!) Safety glasses <input checked="" type="checkbox"/> (!) Ear plugs/muffs	<input type="checkbox"/> Safety goggles <input type="checkbox"/> Face shield	<input checked="" type="checkbox"/> (*) Hard hat <input checked="" type="checkbox"/> Other: Sunscreen
Foot/Leg Protection	<input type="checkbox"/> Leather boots <input checked="" type="checkbox"/> Steel-toed leather boots	<input type="checkbox"/> Steel foot covers <input type="checkbox"/> Kevlar leg chaps	<input type="checkbox"/> Chemical over boots - Material
5.0 Modifications Required: !! - Safety glasses required if an eye hazard exists; ! - Ear plugs, muffs, or a combination of the two, will be used if noise levels exceed 85 dBA, 8-hour TWA; * - Hard hats required if an overhead hazard exists or when working around heavy equipment; Steel Toed boots are required on all field sites.			
6.0 Certification: The PPE and other control methods and procedures to be used in the conduct of this task have been selected as a result of a hazard assessment conducted by individual identified below.			
Printed Name: Deborah M. Engquist, LHSR		Signature: 	

Source: ESE

CERTIFICATION OF TASK HAZARD ASSESSMENT

TASK NAME: Soil Sampling (Level C)

DATE: 03/96

1.0 Hazard Identification: Items checked are known or anticipated site hazards, or may occur as a result of site operations.			
<input checked="" type="checkbox"/> Physical exertion <input checked="" type="checkbox"/> Heat stress <input checked="" type="checkbox"/> Cold stress <input type="checkbox"/> Heavy equipment <input type="checkbox"/> Vehicle traffic <input checked="" type="checkbox"/> Fire hazards (underline) • <u>Flammable Materials (CalGas0)</u> • Fuel/gas lines • Low lying areas	<input checked="" type="checkbox"/> Lifting hazards <input checked="" type="checkbox"/> Slip, trip or fall <input type="checkbox"/> High noise (> 85 dBA) <input type="checkbox"/> Overhead utilities <input checked="" type="checkbox"/> Underground utilities <input checked="" type="checkbox"/> Intrusive activity (underline) • Drilling • <u>Soil excavation</u> • Septic Tank Lid Removal	<input type="checkbox"/> Confined space <input checked="" type="checkbox"/> Poisonous plants <input checked="" type="checkbox"/> Poisonous/Hazardous animals <input type="checkbox"/> Electrical <input checked="" type="checkbox"/> Airborne chemical exposure <input checked="" type="checkbox"/> Contaminated materials/soil/water <input type="checkbox"/> Hand/Power tools <input type="checkbox"/> UXO/OEW <input type="checkbox"/> Puncture / Laceration	
2.0 Degree of Hazard: Anticipated degree of hazard, based on the hazards associated with this task.			
Chemical Hazard: <input type="checkbox"/> Low <input type="checkbox"/> Serious <input checked="" type="checkbox"/> Moderate <input type="checkbox"/> Unknown		Physical Hazard: <input checked="" type="checkbox"/> Low <input type="checkbox"/> Serious <input type="checkbox"/> Moderate <input type="checkbox"/> Unknown	
3.0 Control or Protective Measures: The items checked will be used to control or mitigate the above mentioned hazards.			
<input checked="" type="checkbox"/> Tailgate Safety Briefing <input checked="" type="checkbox"/> Specialized Training <input checked="" type="checkbox"/> Safe Work Practices	<input checked="" type="checkbox"/> Personal protective equipment <input checked="" type="checkbox"/> Air Monitoring <input checked="" type="checkbox"/> Site Control Zones	<input checked="" type="checkbox"/> Decontamination <input type="checkbox"/> Magnetometer Survey	
<input type="checkbox"/> Engineering Controls (List):			
<input checked="" type="checkbox"/> Applicable Programs (List): Heat Stress, UCEP, the SSHASP			
<input type="checkbox"/> Other (List):			
4.0 Task PPE: PPE has been assigned based on the potential for exposure as identified by this hazard assessment.			
Level of Protection	<input type="checkbox"/> A <input type="checkbox"/> B	<input checked="" type="checkbox"/> C <input type="checkbox"/> D	<input type="checkbox"/> Modified
Respiratory Protection	<input type="checkbox"/> SCBA <input type="checkbox"/> Escape SCBA - Size	<input checked="" type="checkbox"/> Fullface respirator <input type="checkbox"/> ½ Face respirator	<input type="checkbox"/> Cartridge - Type <input type="checkbox"/> No respirator required
Protective Clothing	<input type="checkbox"/> Fully encapsulating suit <input checked="" type="checkbox"/> Standard tyvek	<input type="checkbox"/> Saranex <input type="checkbox"/> PE Tyvek: if sampling becomes messy	<input type="checkbox"/> Company clothing <input type="checkbox"/> Other:
Gloves (specify inner/outer)	<input checked="" type="checkbox"/> Nitrile <input type="checkbox"/> Butyl	<input type="checkbox"/> Neoprene <input type="checkbox"/> Latex	<input checked="" type="checkbox"/> Leather <input type="checkbox"/> Cotton
Head/Face/Eye/Ear Protection	(!!) Safety glasses (!) Ear plugs/muffs	<input type="checkbox"/> Safety goggles <input type="checkbox"/> Face shield	(*) Hard hat <input checked="" type="checkbox"/> Other: Sunscreen
Foot/Leg Protection	<input type="checkbox"/> Leather boots <input checked="" type="checkbox"/> Steel-toed leather boots	<input type="checkbox"/> Steel foot covers <input type="checkbox"/> Kevlar leg chaps	<input checked="" type="checkbox"/> Chemical over boots - Material - Tyvek
5.0 Modifications Required: !! - Safety glasses required if an eye hazard exists; ! - Ear plugs, muffs, or a combination of the two, will be used if noise levels exceed 85 dBA, 8-hour TWA; * - Hard hats required if an overhead hazard exists or when working around heavy equipment; Steel Toed boots are required on all field sites.			
6.0 Certification: The PPE and other control methods and procedures to be used in the conduct of this task have been selected as a result of a hazard assessment conducted by individual identified below.			
Printed Name: Richard Hill, PG, LHSR		Signature: 	

Source: ESE.

Appendix E

SOPs for Excavations, Drilling and Boring,
Heavy Equipment, and Temperature Extremes

STANDARD OPERATING PROCEDURE EXCAVATIONS

1.0 PURPOSE

The purpose of this standard operating procedure (SOP) is to provide the minimum safety requirements during projects requiring trenching, excavations, or other surface openings and to comply with the Occupational Safety and Health Administration's (OSHA's) Excavation Standards (29 CFR 1926, Subpart P).

2.0 SCOPE

This SOP applies to all projects where QST Environmental or its subcontractors will perform trenching, excavations, or other surface opening activities. This SOP also applies to projects where QST Environmental employees may enter an excavation or an excavation may pose a hazard during the conduct of project-related field activities regardless of who performs the excavation or trenching.

This SOP does not apply to work sites and/or excavations where QST Environmental has no legal, contractual, or assumed responsibility for the design of the excavation and/or any other related health and safety issues.

3.0 REFERENCES

3.1 REGULATIONS

- OSHA Excavation Standards (29 CFR 1926, Subpart P);
- OSHA Construction Industry Standards (29 CFR Part 1926) as applicable; and
- OSHA General Industry Standards (29 CFR Part 1910) as applicable.

3.2 QST ENVIRONMENTAL HEALTH AND SAFETY PROGRAMS

- Unknown Chemical Exposure Prevention (UCEP) Program;
- H&S SOP-305 - General Construction Safety
- H&S SOP-320 - Heavy Equipment.

4.0 RESPONSIBILITIES

4.1 OFFICE/LAB/DIVISION MANAGER

4.1.1 The Office/Lab/Division Manager shall ensure this SOP is implemented.

4.2 PROJECT MANAGER

4.2.1 The Project Manager shall read and become thoroughly familiar with the requirements of 29 CFR 1926, Subpart P, prior to the initiation of projects which will involve excavations.

4.2.2 The Project Manager shall ensure a Registered Professional Engineer, having appropriate working experience in structural design and inspection of excavations, is involved when excavation design, other than the design options specified in 29 CFR 1926.652 paragraphs (b)(1) and (b)(2), or if structural inspections are required.

4.2.3 The Project Manager shall assign a Competent Person (CP) to be onsite daily during excavation activities. The Project Manager shall ensure and document the CP meets the requirements defined under the definition in 29 CFR 1926, Subpart P. In particular, the Project Manager must be convinced and document that the CP has adequate training and experience to visually identify soils per 29 CFR 1926, Subpart P, Appendix A, and has read and is familiar with the requirements of the OSHA Excavation Standards, especially as they relate to the specific excavation(s) they will be working with. In addition, the CP must be cognizant of adjacent structures, understand the importance of saturation or position of the water table to slope stability and be familiar with slope protective systems.

4.2.4 When a Registered Professional Engineer has prepared an excavation design, the Project Manager shall ensure that the design is included in the project documents, i.e. plans and specifications. The specific requirements for the design documents may vary, state by state, but, at a minimum, shall include:

- 1) Plan location(s) requiring shoring,
- 2) Representative cross-sections of the shoring system,
- 3) Specifications for the materials used for the system,
- 4) Distribution and capacity of hydraulic shores, and
- 5) Manufacturer's reference if a proprietary system is proposed.

4.3 COMPETENT PERSON (CP)

4.3.1 QST Environmental's Field Team Leader (FTL) may serve as the CP on projects involving excavations. The CP shall, by having appropriate training, working experience and designation by the Project Manager, be capable of performing the following:

- Identify existing and predictable hazards in and around the job site (e.g., adjacent building, sidewalks, streets, areas that may be affected by the excavation) and working conditions that are unsanitary, hazardous, or dangerous to employees on the work site;
- Assess for potential hazardous atmospheres within and around the excavation and implement proper levels of protection when hazardous atmospheres are encountered; and
- Have a working knowledge of soil types and slope protective systems and be capable of interpreting and implementing the OSHA Excavation Standards.

4.3.2 The CP shall ensure the safety requirements outlined in Section 5 of this SOP and all additional requirements contained in the OSHA Excavations Standards are followed on projects requiring trenching, excavations, or other surface openings.

4.4 HEALTH AND SAFETY COORDINATOR (HSC)

4.4.1 The HSC shall provide guidance and consultation when requested by the Office/Lab/Division Manager or the LHSR/CHO.

4.4.2 The HSC may periodically audit the Office/Lab/Division on behalf of Corporate Health & Safety for compliance with this SOP.

4.5 CORPORATE HEALTH & SAFETY (CHS)

4.5.1 CHS shall ensure that the Office/Lab/Division is periodically audited for compliance with this SOP.

4.5.2 CHS shall provide consultation when requested by the Office/Lab/Division Manager or the LHSR/CHO.

5.0 DESCRIPTION

NOTE: The OSHA Excavation Standards are quite detailed in their treatment of excavation health and safety hazards and their mitigation. This Section is not intended to substitute for a thorough knowledge of the appropriate applicable parts of the OSHA standards as they relate to a specific excavation and/or project. Rather, it is only intended to serve as a brief general summary of some of the key provisions of the standards. Each Project Manager and project Competent Person are responsible for ensuring that the CP has adequate knowledge of all of the applicable provisions of the OSHA Excavation Standards as they relate specifically to their project.

Trenching and excavation work presents serious risks to all workers involved. For this reason, all QST Environmental employees involved in trenching, excavation, or other surface opening projects shall be familiar with the potential safety hazards and be knowledgeable in the appropriate safety measures needed to ensure a safe working environment on excavation projects. One method of protecting workers in an excavation from the hazard posed by the potential for collapse of excavation walls is to slope the sides of any excavation more than five feet in depth to an angle of not steeper than one and one half to one (34 degrees to the horizontal), unless there are signs of stress, in which case the maximum slope should be cut back to two to one. Slopes of these gradations are considered safe for any soil type being excavated.

5.1 The CP shall ensure the location of utility installations, such as sewer, telephone, fuel, electric, water lines, or any other underground installation that reasonably may be expected

to be encountered during excavation work, have been determined prior to the opening of an excavation.

5.2 The CP shall ensure design documents as required by 4.2.2 and 4.2.4 are maintained at the project site during excavation activities.

5.3 The CP shall ensure that all employees entering an excavation are protected from cave-ins by an adequate protective system except when the CP has determined that there is no indication of a potential cave-in and:

- The excavation is less than five feet in depth; or
- The excavation is made entirely in stable rock.

Protective systems shall have the capacity to resist, without failure, all loads that are intended or could reasonably be expected to be applied or transmitted to the system.

5.4 The Project Manager and CP shall ensure walkways constructed over excavations meet the requirements of OSHA's standards for guardrails, handrails, and covers (29 CFR 1926.500).

5.5 The CP shall ensure a stairway, ladder, ramp, or other safe means of egress is located in trench excavations that are four feet or more in depth so as to require no more than 25 feet of lateral travel.

5.6 The Project Manager shall ensure structural ramps that are used solely as a means of access or egress from excavations are designed by a person qualified in structural design. This design should be accomplished during the preparation of contract documents, consistent with the requirements stated in 4.2.2 and 4.2.4 for involvement by a Registered Professional Engineer.

5.7 The CP shall ensure no work is allowed in excavations where water is accumulating unless adequate precautions have been taken to protect against the hazards posed by water accumulation. The precautions necessary vary with each situation, but could include special support or shield systems to protect from cave-ins, water removal to control the level of accumulating water, or use of a safety harness and lifeline.

5.8 An inspection shall be conducted by the CP prior to the start of work and daily when field activities involve excavations. Inspections shall also be made after every rainstorm or other hazard-increasing occurrence. The Trench Safety Daily Field Report, which can be found in Attachment A, shall be completed during the daily inspection. A copy of each inspection report shall be included in the project file.

5.9 Where the CP finds evidence of a situation that could result in a possible cave-in, indications of failure of protective systems or other hazardous conditions (e.g., hazardous atmospheres),

workers shall leave the area until the necessary precautions have been taken to ensure their safety. The area shall be reinspected by a Registered Professional Engineer prior to restart of work if the hazardous condition was associated with the excavation design or structural integrity of the excavation. The area shall be reinspected by the CP prior to restart of work if the hazardous condition involved other health and safety issues, e.g., hazardous atmospheres.

- 5.10 The CP shall ensure materials or equipment used on the project that might fall or roll into an excavation are kept at least two feet from the edge of a vertical excavation and never be allowed on the sloping portion of any excavation. A general rule of thumb for good operating practices is to keep employees or equipment a distance from the edge of the excavation equal to the excavation depth.
- 5.11 The CP shall ensure warning systems, such as mobile equipment barricades, hand or mechanical signals, or stop logs are provided to alert equipment operators of the edge of an excavation.
- 5.12 The CP shall ensure all wells, pits, shafts, etc., are barricaded or covered when the project site is unattended. Upon completion of excavation and similar operations, temporary wells, pits, shafts, etc., shall be backfilled. Any shoring system, including a trench box, must remain in the excavation when the project site is unattended.
- 5.13 In the event local traffic needs to be interrupted during site operations, e.g., to move a piece of heavy equipment, the local traffic control authority shall be contacted for proper procedures.
- 5.14 Employees exposed to public vehicular traffic shall be provided with and shall wear warning vests or other suitable garments marked with or made of reflective or high-visibility material.
- 5.15 Refer to QST Environmental's H&S SOP-320 - Heavy Equipment, for safety concerns of heavy equipment utilized on excavation projects.
- 5.16 The CP shall ensure that air monitoring is carried out in any excavation greater than 4 feet in depth where one might reasonably expect a hazardous atmosphere to be present or to develop. Such atmospheric hazards could include oxygen deficiency, flammable atmospheres, or toxic contaminants. Where more than one type of potential atmospheric hazard exists, the following order of testing must be followed:
 1. Oxygen content;
 2. Flammable gases and vapors;
 3. Potential toxic contaminants.

If atmospheric hazards are identified, then the provisions of 29 CFR 1926.651(g) shall apply.

ATTACHMENT A
TRENCH SAFETY DAILY FIELD REPORT



Environmental
Science &
Engineering, Inc.

TRENCH SAFETY DAILY FIELD REPORT

Date: _____

QST Project No.: _____

Project Name: _____

Client: _____

CP: _____

Location: _____

Weather Condition: _____

Rainfall amounts 24 hours previous _____

I hereby attest that the following conditions existed and that the following items were checked or reviewed during this inspection: (circle appropriate response--circling a lowercase letter requires additional comment).

- 1. All open trenches inspected? _____ Y n
- 2. Were any open cracks observed along top of any slopes? _____ y N
- 3. Were slopes cut at angle in design documents or as required by 29 CFR 1926, Subpart P? _____ Y n
- 4. Was any water seepage noted in trench walls or trench bottom? _____ y N
- 5. Was seepage turbid or cloudy? _____ Y n
- 6. Was bracing system installed in accordance with design documents? _____ Y n
- 7. Was there evidence of shrinkage cracks in trench walls? _____ y N
- 8. Was there any evidence of caving or sloughing of soil since the last field inspection? _____ y N
- 9. Were there any zones of unusually weak soils or materials which had not been anticipated? _____ y N
- 10. Was there any evidence of fracture planes in soil or rock? _____ y N
- 11. Were any major (greater than 2 feet) depressions in the bedrock noted? _____ y N
- 12. Changed subsurface condition from those anticipated: _____

- 13. Are open trenches covered at the end of the work shift? _____ Y n
- 14. Trench box(es) design documentation onsite? _____ Y n
Shield capacity in pounds per square foot: _____
- 15. Were hydraulic shores pumped to design pressure? _____ Y n
- 16. Type shoring being used _____ secure? _____ Y n
- 17. Traffic in area secured from trenching operations with barricades? _____ Y n
- 18. Trees, boulders, or other hazards in area? _____ y N
- 19. Vibrations from equipment or traffic observed? _____ y N

20. List heavy equipment near trench: _____

21. Other heavy equipment in use onsite: _____

22. Contractor and/or subcontractor personnel by trade onsite: _____

23. Contractor and/or subcontractor supervisor(s) onsite: _____

24. Description of excavation activities by location: _____

25. Observations: _____

26. Additional Comments: _____

Excavation Contractor Representative

QST Competent Person Signature

Copies of this form are to be kept at the jobsite for review by QST Environmental H&S representatives, owner, project manager, or regulatory authorities at all times. A completed copy of this inspection form shall be placed in the project file upon project completion.

STANDARD OPERATING PROCEDURE DRILLING AND BORING

1.0 PURPOSE

The purpose of this standard operating procedure (SOP) is to provide minimum safety requirements for projects where drilling and boring activities are conducted, and to comply with applicable OSHA standards.

2.0 SCOPE

This SOP provides minimum safety requirements for QST Environmental employees working on projects where drilling and boring operations are conducted. QST Environmental and QST Environmental subcontractors shall operate drilling and boring equipment in accordance with the requirements of 29 CFR 1926, Subpart O and safety guidelines published by the National Water Well Association.

3.0 REFERENCES

3.1 REGULATIONS

- OSHA Construction Industry Standards 20 CFR Part 1926 as applicable;
- OSHA General Industry Standards 29 CFR Part 1910 as applicable.

3.2 QST ENVIRONMENTAL HEALTH & SAFETY PROGRAMS & SOPs

- Unknown Chemical Exposure Prevention (UCEP) Program
- Lockout/Tagout Program
- Hearing Conservation Program
- H&S SOP-305 - General Construction Safety
- H&S SOP-320 - Heavy Equipment

4.0 RESPONSIBILITIES

4.1 OFFICE/LAB/DIVISION MANAGER

- 4.1.1 The Office/Lab/Division Manager shall ensure this SOP is implemented.

4.2 PROJECT MANAGER

- 4.2.1 The Project Manager shall ensure the requirements of this SOP are followed on projects they manage which require drilling and boring field activities.

4.3 FIELD TEAM LEADER (FTL)/SITE HEALTH & SAFETY OFFICER (SHSO)

- 4.3.1 The FTL/SHSO shall implement the safety requirements outlined in Section 5 of this SOP and ensure they are discussed during site safety meetings.
- 4.3.2 The FTL/SHSO shall document in the project file the daily safety meetings pertaining to drilling and boring safety.

4.4 HEALTH AND SAFETY COORDINATOR (HSC)

- 4.4.1 The HSC shall provide guidance and consultation when requested by the Office/Lab/Division Manager or the LHSR/CHO.
- 4.4.2 The HSC may periodically audit the Office/Lab/Division on behalf of Corporate Health & Safety for compliance with this SOP.

4.5 CORPORATE HEALTH & SAFETY (CHS)

- 4.5.1 CHS shall ensure that the Office/Lab/Division is periodically audited for compliance with this SOP.
- 4.5.2 CHS shall provide consultation when requested by the Office/Lab/Division Manager or the LHSR/CHO.

5.0 DESCRIPTION

QST Environmental employees involved in drilling and boring field activities shall be familiar with the potential safety hazards, and be knowledgeable in the appropriate safety measures needed to ensure a safe working environment. Safety hazards related to drilling and boring field activities are discussed below.

5.1 SAFETY CONCERNS OF DRILLING AND BORING OPERATIONS

- 5.1.1 Daily tail-gate safety meetings will be conducted and noted in the project field log as to the safety concerns pertaining to that day's use of drilling and boring equipment.
- 5.1.2 The location of utility installations, such as sewer, telephone, fuel, electric, water lines, or any other underground installation and over head power lines that reasonably may be expected to be encountered during drilling and boring operations, shall be determined prior to drilling or boring.
- 5.1.3 A warning device or signal person shall be provided where there is danger to employees from moving drilling and boring equipment.

- 5.1.4 Where manual (hand) signals are used, only one person shall be designated to give signals to the operator. The signal person shall be located to see the load and be clearly visible to the operator.
- 5.1.5 All unnecessary vehicles shall be parked away from the drill rig a distance equal to the height of the drill rig mast.
- 5.1.6 Seat belts shall be worn by operators and passengers when driving drilling and boring equipment over the road.
- 5.1.7 Employees shall not be allowed under or in a derrick being raised or lowered.
- 5.1.8 No smoking or open flames shall be permitted in the vicinity of operating drill rigs.
- 5.1.9 Drill rigs and support vehicles shall be equipped with the appropriate fire extinguisher.
- 5.1.10 Drilling and boring equipment shall be equipped with the appropriate first aid kit.
- 5.1.11 Employees shall be knowledgeable of equipment operations and safe distances and areas to locate themselves to prevent accidents from hoists, augers, etc.
- 5.1.12 When maintenance or servicing is to be accomplished on power driven equipment, the immediate source of power shall be locked out in accordance with the equipment specific lockout/tagout procedures. Refer to QST Environmental's Lockout/Tagout Program.
- 5.1.13 Drilling and boring operations shall be restricted to daylight hours unless adequate lighting is established.
- 5.1.14 All site personnel shall be informed of the location of the emergency shut-off device for each piece of equipment on site.
- 5.1.15 The proper size of tong shall be used on each size of auger and or pipe.
- 5.1.16 Refer to QST Environmental's H&S SOP-320 - Heavy Equipment for safety concerns relating to the use of heavy equipment.
- 5.1.17 In the event local traffic needs to be interrupted during site operations, the local traffic control authority shall be contacted for proper procedures to follow.
- 5.1.18 Employees exposed to public vehicular traffic shall be provided with, and shall wear, warning vests or other suitable garments marked with or made of reflective or highly-visible material.

- 5.1.19 To protect the public from the site's hazards, the FTL shall determine a safe distance around the work area and place barricades, construction fencing, barrier tape, etc., around the work site until the project is completed.
- 5.1.20 Loose, ill-fitting clothing can get caught in drilling and boring equipment, therefore, proper fitting clothing is required when operating or working on this equipment.
- 5.1.21 Long hair that extends below the hard hat shall be restrained in a manner to prevent contact with moving and rotating equipment parts.
- 5.1.22 A minimum of 10 feet of clearance shall be maintained between the extended drill rig mast and overhead power lines. For voltages exceeding 50 kV, the clearance shall be increased by 4 inches for every additional 10 kV. If it is not feasible to obtain the proper clearance, the local electric utility shall be contacted for assistance.

5.2 SAFETY EQUIPMENT

- 5.2.1 ANSI approved hard hats and safety boots shall be worn when drilling and boring equipment is in operation and when maintenance is being performed on the equipment.
- 5.2.2 ANSI approved safety glasses shall be worn around drilling and boring equipment unless full face respirators are required to be worn.
- 5.2.3 Hearing protection shall be worn when drilling and boring equipment is in operation unless the noise level has been measured in accordance with QST Environmental's Hearing Conservation Program and determined to be less than 85 dB(A) as an 8 hour time weighted average.
- 5.2.4 The appropriate pair(s) of gloves shall be worn to protect the hands when working on a drill rig.
- 5.2.5 A safety harness with a safety line, meeting the requirements of 29 CFR 1926.502(d) shall be worn when climbing or working in the derrick. Affected employees shall be trained in the correct procedures for assembling, disassembling, maintaining, and inspecting the safety harness/line system prior to using this equipment. This training shall be documented in the project log book, including the name of the employee(s) trained, the date of the training, and the signature of the competent person providing the training.

STANDARD OPERATING PROCEDURE HEAVY EQUIPMENT

1.0 PURPOSE

The purpose of this standard operating procedure (SOP) is to provide minimum safety requirements during field activities which utilize heavy equipment (e.g., backhoe, bulldozer, trencher, etc.).

2.0 SCOPE

This SOP applies to all QST Environmental operations where heavy equipment is being used, including sites where the equipment is owned and operated by subcontractors or other contractors.

3.0 REFERENCES

3.1 REGULATIONS

- OSHA Construction Industry Standards 29 CFR Part 1926, Subpart O as applicable;
- OSHA General Industry Standards 29 CFR Part 1910 as applicable.

3.2 QST ENVIRONMENTAL HEALTH & SAFETY PROGRAMS

- Unknown Chemical Exposure Prevention (UCEP) Program
- Hearing Conservation Program

4.0 RESPONSIBILITIES

4.1 OFFICE/LAB/DIVISION MANAGER

4.1.1 The Office/Lab/Division Manager shall ensure this SOP is implemented.

4.2 PROJECT MANAGER

4.2.1 The Project Manager shall ensure this SOP is followed on all QST Environmental projects involving heavy equipment.

4.3 FIELD TEAM LEADER (FTL)/SITE HEALTH & SAFETY OFFICER (SHSO)

4.3.1 The FTL/SHSO shall ensure the safety requirements outlined in Section 5 of this SOP are followed when heavy equipment is used on QST Environmental projects.

4.3.2 The FTL/SHSO shall ensure QST Environmental employees operate heavy equipment in accordance with OSHA requirements (29 CFR 1926, Subpart O).

4.4 FIELD TEAM MEMBERS (FTM)

- 4.4.1 FTMs shall follow the safety requirements outlined in Section 5 of this SOP and adhere to OSHA requirements (29 CFR 1926, Subpart O).

4.5 HEALTH AND SAFETY COORDINATOR (HSC)

- 4.5.1 The HSC shall provide guidance and consultation when requested by the Office/Lab/Division Manager or the LHSR/CHO.
- 4.5.2 The HSC may periodically audit the Office/Lab/Division on behalf of Corporate Health & Safety for compliance with this SOP.

4.6 CORPORATE HEALTH & SAFETY (CHS)

- 4.6.1 CHS shall ensure that the Office/Lab/Division is periodically audited for compliance with this SOP.
- 4.6.2 CHS shall provide consultation when requested by the Office/Lab/Division Manager or the LHSR/CHO.

5.0 DESCRIPTION

All employees involved in projects using heavy equipment shall be familiar with the potential hazards of the specific type of heavy equipment being used and be knowledgeable in the appropriate safety measures needed to ensure a safe working environment.

5.1 SAFETY CONCERNS OF HEAVY EQUIPMENT

- 5.1.1 A warning device or signal person shall be provided where there is danger to nearby workers from moving equipment, swinging loads, buckets, booms, etc.
- 5.1.2 Where manual (hand) signals are used, only one person shall be designated to give signals to the operator. The signal person shall be located to see the load and be clearly visible to the operator.
- 5.1.3 No employee shall be permitted underneath loads handled by lifting or digging equipment.
- 5.1.4 Employees shall be required to stay clear from any vehicle being loaded or unloaded to avoid being struck by any spillage or falling materials.
- 5.1.6 Mechanized equipment shall be shut down prior to and during fueling operations.

- 5.1.7 Each piece of heavy equipment on site shall be equipped with an appropriate fire extinguisher.
- 5.1.8 Motor vehicles shall not be located in the exclusion zone during operation of heavy equipment.
- 5.1.9 No smoking or open flames shall be permitted around heavy equipment utilized onsite.
- 5.1.10 A tail-gate safety meeting shall be conducted and documented as to the safety concerns pertaining to that day's use of heavy equipment.
- 5.1.11 In the event local traffic needs to be interrupted during site operations, the local traffic control authority shall be contacted for proper procedures to follow.
- 5.1.12 Employees exposed to public vehicular traffic shall be provided with, and shall wear, warning vests or other suitable garments marked with or made of reflective or highly-visible material.
- 5.1.13 To protect the public from the site's hazards, the FTL shall determine a safe distance around the work area and place barricades, construction fencing, barrier tape, etc., around the work site until the project is completed.
- 5.1.14 Loose, ill-fitting clothing can get caught in heavy equipment, therefore, proper fitting clothing shall be worn during field activities which involve heavy equipment.
- 5.1.15 Long hair that extends below the hard hat shall be restrained in a manner to prevent contact with moving equipment parts.
- 5.1.16 For equipment with moving, rotating or swinging parts, employees shall not walk between the heavy equipment and any building, wall, or other structure. If a piece of heavy equipment will operate for a period longer than 15 minutes in a location where a crushing hazard of this sort exists, then a barricade of some type (e.g., construction tape) shall be put up to warn employees away from the crushing hazard zone.
- 5.1.17 Employees shall not be allowed to ride on heavy equipment except in a manufacturer approved seat or people mover. Riding in buckets, lift carriages or forks, backs of dump trucks, etc. is strictly prohibited.

5.2 SAFETY EQUIPMENT

- 5.2.1 ANSI approved hard hats and safety boots shall be worn at all times when working on or around heavy equipment.

- 5.2.2 ANSI approved safety glasses shall be worn at all times when working around heavy equipment unless full face respirators are required to be worn.
- 5.2.3 Hearing protection shall be worn when heavy equipment is in operation unless the noise level has been measured in accordance with QST Environmental's Hearing Conservation Program and determined to be less than 85 dB(A) as an 8 hour time weighted average.
- 5.2.4 Seats and seat belts shall be installed and used by operators and passengers of heavy equipment. The only exception to this requirement shall be for heavy equipment designed for stand-up operation only or equipment that does not have adequate canopy protection or rollover protective structure.
- 5.2.5 All heavy equipment shall be equipped with working brakes, including a parking brake. Braking systems shall meet the requirements of 29 CFR 1926.602. Chocks shall also be available and used when parking on inclines.
- 5.2.6 All bidirectional machines shall be equipped with an operating horn, distinguishable from the surrounding noise level, which shall be operated as needed when the machine is moving in either direction.
- 5.2.7 Heavy equipment which has an obstructed view to the rear must either have an operating reverse signal alarm distinguishable from the surrounding noise level, or an employee providing signals that it safe to back the equipment up.

STANDARD OPERATING PROCEDURES TEMPERATURE EXTREMES

1.0 PURPOSE

The purpose of this standard operating procedure (SOP) is to provide guidelines for the prevention of heat and cold related illness and injury and to comply with OSHA's 29 CFR 1910.120 standard and QST Environmental's Unknown Chemical Exposure Prevention (UCEP) Program.

2.0 SCOPE

This SOP applies to all QST Environmental operations where employees may encounter extreme temperatures.

3.0 REFERENCES

3.1 REGULATIONS

- 29 CFR 1910.120 - Hazardous Waste Operations and Emergency Response
- 29 CFR 1926.65 - Hazardous Waste Operations and Emergency Response (Construction)

3.2 QST ENVIRONMENTAL HEALTH & SAFETY PROGRAMS

- Unknown Chemical Exposure Prevention (UCEP) Program
- Medical Surveillance Program
- Accident/Illness Prevention Program

4.0 RESPONSIBILITIES

4.1 OFFICE/LAB/DIVISION MANAGER

4.1.1 The Office/Lab/Division Manager shall implement the requirements of this SOP by assigning the specified functions and responsibilities to the site supervisors and Site Health & Safety Officer.

4.2 LOCAL HEALTH & SAFETY REPRESENTATIVE (LHSR)/CHEMICAL HYGIENE OFFICER(CHO)

4.2.1 The LHSR/CHO shall maintain the monitoring records pertinent to this SOP in accordance with H&S SOP-160 - Health and Safety Recordkeeping.

4.3 HEALTH AND SAFETY COORDINATOR (HSC)

- 4.3.1 The HSC shall provide guidance and consultation when requested by the Office/Lab/Division Manager or the LHSR/CHO.
- 4.3.2 The HSC may periodically audit the Office/Lab/Division on behalf of Corporate Health & Safety for compliance with this SOP.

4.4 CORPORATE HEALTH & SAFETY (CHS)

- 4.4.1 CHS shall ensure that the Office/Lab/Division is periodically audited for compliance with this SOP.
- 4.4.2 CHS shall provide consultation when requested by the Office/Lab/Division Manager or the LHSR/CHO.

4.5 SITE HEALTH & SAFETY OFFICER (SHSO)

- 4.5.1 The SHSO shall be designated to perform any physiological monitoring described in this SOP. The frequency of monitoring should be based on the temperature guidelines listed in Table I.
- 4.5.2 The SHSO may modify implementation of this SOP based on the site conditions, observations of field team monitoring, professional judgement and physiological monitoring results.
- 4.5.3 If implementation of the procedures in this SOP are amended or changed for a specific project, then these variations should be documented in writing and be communicated to all site employees at one or more site-specific (tailgate) training meetings.

5.0 HEAT STRESS

5.1 PHYSIOLOGICAL MONITORING

- 5.1.1 Because the incidence of heat stress depends on a variety of factors, all employees, even those not wearing protective equipment, should be monitored. Initially, the frequency of physiological monitoring depends on the air temperature adjusted for solar radiation and the level of physical work (see Table I). As shown in Table I, the frequency of monitoring increases as the ambient temperature increases. Monitoring frequency shall also increase as slow recovery rates to baseline (prework) levels are indicated.

TABLE I
Suggested Frequency of Physiological Monitoring for Fit and Acclimatized Employees

ADJUSTED TEMPERATURE ^b	NORMAL WORK ENSEMBLE ^c	IMPERMEABLE ENSEMBLE
90°F(32.2°C) or above	After each 45 minutes of work	After each 15 minutes of work
87.5°-90°F (30.8°-32.2°C)	After each 60 minutes of work	After each 30 minutes of work
82.5°-87.5°F (28.1°-30.8°C)	After each 90 minutes of work	After each 60 minutes of work
77.5°-82.5°F (25.3°-28.1°C)	After each 120 minutes of work	After each 90 minutes of work
72.5°-77.5°F (22.5°-25.3°C)	After each 150 minutes of work	After each 120 minutes of work

^a For work levels of 250 kilocalories/hour.

^b Calculate the adjusted air temperature (ta adj) by using this equation: $ta\ adj = ta + (13 \times \% \text{ sunshine})$ where ta adj and ta are in °F. Measure air temperature (ta) with a standard mercury-in-glass thermometer, with bulb shielded from radiant heat. Estimate percent sunshine by judging what percent time the sun is not covered by clouds that are thick enough to produce a shadow (e.g., 100 percent sunshine = no cloud cover and a sharp, distinct shadow; 0 percent sunshine = no shadows.)

^c Consists of cotton coveralls or other cotton clothing with long sleeves and pants.

5.1.2 The following physiological monitoring techniques should be used as a screening mechanism unless the SHSO modifies the procedures and documents the changes in the log.

- Heart rate (HR) should be measured by the radial pulse for 30 seconds as early as possible in the resting period.
- Body temperature should be measured orally (3 minutes under the tongue) with a sterile, clinical thermometer as early as possible in the resting period (before drinking).

5.1.3 For employees wearing permeable clothing (e.g., standard cotton or synthetic work clothes), follow recommended work/rest schedules in the current American Conference of Governmental Industrial Hygienists' (ACGIH) Threshold Limit Values (TLV) for Heat Stress.

5.1.4 For employees wearing impermeable clothing, the ACGIH TLV cannot be used. In these cases, the work/rest schedules shall be based on the results of the physiological monitoring:

- The HR at the beginning of the rest period should not exceed 110 beats/minute. If the HR is higher, the next work period should be shortened by 33 percent, while the length of the rest period stays the same. If the HR is 110 beats/minute at the beginning of the subsequent period, the following work cycles should be shortened by 33 percent.
- Oral temperature (OT) at the beginning of the rest period should not exceed 99°F. If it does, the next work period should be shortened by 33 percent, while the length of the rest period stays the same. However, if the OT exceeds 99.7°F at the beginning of the first rest period, make sure that it has dropped below 99°F before work is resumed.

5.1.5 When the TLVs are exceeded or employees are required to wear semipermeable or impermeable garments, an employee shall discontinue working when:

- The HR exceeds 160 beats/minute for those under 35 years of age, or 140 beats/minute for those 35 years or older;
- OT exceeds 100°F (38°C);
- There are complaints of sudden and severe fatigue, nausea, dizziness, lightheadedness, or fainting;
- There are periods of inexplicable irritability, malaise, or flu-like symptoms; or
- Sweating stops and the skin is hot and dry.

5.2 PREVENTION

Proper training and preventive measures will help avert serious illness and loss of work productivity. Preventing heat stress is particularly important because once someone suffers from heat exhaustion, that person may be predisposed to additional heat injuries. To avoid heat stress, management should take the following steps:

5.2.1 Adjust work schedules:

- Modify work/rest schedules according to monitoring requirements;
- Mandate work slowdowns as needed;
- Rotate personnel: alternate job functions to minimize overstress or overexertion at one task;
- Add additional personnel to work teams; and/or
- Perform work during cooler hours of the day if possible or at night if adequate lighting can be provided.

5.2.2 Provide shelter (air-conditioned, if possible) or shaded areas to protect personnel during rest periods.

5.2.3 Maintain employees' body fluids at normal levels. This is necessary to ensure that the cardiovascular system functions adequately. Daily fluid intake must approximately equal the amount of water lost in sweat, i.e., 8 fluid ounces (0.23 liters) of water must be ingested for approximately every 8 ounces (0.23 kg) of weight lost. The normal thirst mechanism is not sensitive enough to ensure that enough water will be drunk to replace lost sweat. When heavy sweating occurs, encourage the employee to drink more. The following strategies may be useful:

- Maintain water temperature at 50° to 60°F (10° to 15.6°C);
- Provide small disposable cups that hold about 4 ounces (0.1 liter);
- Have employees drink 16 ounces (0.5 liters) of fluid (preferably water or dilute drinks) before beginning work;
- Urge employees to drink a cup or two every 15 to 20 minutes, or at each monitoring break. A total of 1 to 1.6 gallons (4 to 6 liters) of fluid per day are recommended, but more may be necessary to maintain body weight; and
- Weigh employees before and after work to determine if fluid replacement is adequate.

5.2.4 Employees shall be encouraged to maintain an optimal level of physical fitness and to maintain normal weight levels. Where indicated, employees shall be acclimatized to site work conditions, including temperature, protective clothing, and workload.

5.2.5 Cooling devices may be provided to aid natural body heat exchange during prolonged work or severe heat exposure. Cooling devices include:

- Field showers or hose-down areas to reduce body temperature and/or to cool off protective clothing; and/or
- Cooling jackets, vests, or suits.

5.2.6 Employees shall be trained to recognize and treat heat stress. Training shall include the signs and symptoms of heat related illnesses.

5.2.7 Employees shall be encouraged to refrain from drinking alcoholic beverages while off duty (alcohol consumption is **never** permitted on site). Alcohol can increase the loss of body fluids and therefor increase the risk of heat stress.

6.0 COLD EXTREMES

6.1 GENERAL REQUIREMENTS

6.1.1 Employees shall be encouraged to refrain from drinking alcoholic beverages while off duty (alcohol consumption is **never** permitted on site) because the resultant dilation of blood vessels can permit a rapid loss of body heat, increasing the risk of hypothermia.

- 6.1.2 Dehydration can occur in cold environments as well as hot ones, increasing employees' susceptibility to cold injury. In order to maintain the body's fluid level and to provide necessary calories, warm, sweet drinks and/or soup may be provided at the work site. However, coffee should not be provided and employees should be encouraged to limit their off duty coffee consumption.
- 6.1.3 In order to calculate wind chill (see Table III), both the temperature and wind speed shall be monitored or checked every 4 hours. This data shall be recorded in the project log book. If wind speed data is not available the following guidelines may be used:
- 5 mph - light flag moves
 - 10 mph - light flag fully extended
 - 15 mph - raises newspaper sheet
 - 20 mph - blowing and drifting snow.
- 6.1.4 Employees who routinely work in subzero temperatures shall be actively participating in QST Environmental's Medical Surveillance Program, and be cleared for such work by the Medical Surveillance Administrator for such work.
- 6.1.5 Employees who are taking medication or have a medical condition which interferes with normal body temperature or tolerance to the cold shall not be assigned to field work where temperatures are below 32°F

6.2 WORK-WARM REGIMEN

- 6.2.1 A work-warm regimen shall be instituted when work is being conducted in environments where the equivalent chill temperature (see Table III) is below 20°F. Heated warming shelters shall be available or provided on or nearby the work site, as appropriate.
- 6.2.2 Employees shall be given breaks at regular intervals to use the shelter. Table II contains the requirements for the number of breaks per 4 hour shift for extremely low temperatures. At other temperatures, the Field Team Leader (FTL) and Site Health & Safety Officer (SHSO) shall use professional judgement to determine the number of breaks necessary, based on the environmental conditions present (i.e., more frequent breaks for colder equivalent chill temperatures). In addition, an employee experiencing any of the following symptoms shall return immediately to the warming shelter: heavy shivering; frostnip; excessive fatigue; irritability; or euphoria.
- 6.2.3 Breaks shall be at least 10 minutes in duration, and the interval shall be noted in the HASP. Employees shall remove the outer layer of clothing and loosen other layers upon entering the shelter.

6.3 ADDITIONAL CONTROL MEASURES

- 6.3.1 For work in temperatures below 40°F, insulating clothing must be provided. If possible, several lighter layers of clothing shall be worn instead of one layer of heavy clothing. If wind is a factor, an outer layer of windproof clothing should be worn.
- 6.3.2 If insulating clothing becomes wet, employees should change into dry clothing as soon as possible. For temperatures below 36°F, employees shall change into dry clothing immediately, and be allowed to warm-up sufficiently before returning to work.
- 6.3.3 Insulating gloves shall be used as necessary to prevent frostbite and loss of dexterity. If gloves will impede the type of work to be performed, other arrangements, such as the use of heaters shall be employed.
- 6.3.4 For work in equivalent chill temperatures of 10°F or less, the following additional precautions shall be taken:
- There shall be at least two employees on site at all times, and they shall be in constant visual or verbal contact;
 - Employees shall not work so hard as to cause heavy sweating; and
 - Times of prolonged, inactive sitting or standing shall be limited to the extent feasible.

TABLE II
Work/Warm Schedule for 4-Hour Shift*

Air Temperature Sunny Sky	No Noticeable Wind		5 mph Wind		10 mph Wind		15 mph Wind		20 mph Wind		
	Max. Work Period	No. of Breaks									
-15 to -19 °F		1		1	75 min	2	55 min	3	40 min	4	
-20 to -24 °F		1	75 min	2	55 min	3	40 min	4	30 min	5	
-25 to -29	75 min	2	55 min	3	40 min	4	30 min	5	Non emergency work should cease		
-30 to -34	55 min	3	40 min	4	30 min	5	Non emergency work should cease				
-35 to -39	40 min	4	30 min	5	Non emergency work should cease						
-40 to -44	30 min	5	Non emergency work should cease								
-45 and below	Non emergency work should cease										

* Adapted from Occupational Health & Safety Division, Saskatchewan Department of Labor

¹ Schedule applies to any 4-hour period with moderate to heavy work activity and an extended lunch break. For light to moderate work, apply one step lower.

² Applies to employees in dry clothing.

TABLE III
WINDCHILL CHART*

Actual Temperature Reading (°F)												
Estimated Wind Speed (mph)	50	40	30	20	10	0	-10	-20	-30	-40	-50	
	Equivalent Chill Temperature (°F)											
calm	50	40	30	20	10	0	-10	-20	-30	-40	-50	
5	48	37	27	16	6	-5	-15	-26	-36	-47	-57	
10	40	28	16	4	-9	-24	-33	-46	-58	-70	-83	
15	36	22	9	-5	-18	-32	-45	-58	-72	-85	-99	
20	32	18	4	-10	-25	-39	-53	-67	-82	-96	-110	
25	30	16	0	-15	-29	-44	-59	-74	-88	-104	-118	
30	28	13	-2	-18	-33	-48	-63	-79	-94	-109	-125	
35	27	11	-4	-20	-35	-51	-67	-82	-98	-113	-129	
40**	26	10	-6	-21	-37	-53	-69	-85	-100	-116	-132	
	LITTLE DANGER In < hr with dry skin. Maximum danger of false sense of security.				INCREASING DANGER Danger from freezing of exposed flesh within one minute.				GREAT DANGER Flesh may freeze within 30 seconds			

* Developed by U.S. Army Research Institute of Environmental Medicine, Natick, MA

** Wind speeds greater than 40 mph have little additional effect.

7.0 TRAINING REQUIREMENTS

7.1 COURSE TOPICS

7.1.1 All employees who may have to perform work in hot or cold environments shall receive training on the following topics:

- Signs and symptoms of heat and cold related illnesses (see Attachment A to this SOP);
- Methods that can be taken to prevent these illnesses; and
- Proper eating and drinking habits when working in a hot or cold environment.

7.1.2 All supervisory personnel, including FTLs, SHSOs, and Project Managers shall also receive training on:

- The requirements of this SOP;
- How to correctly perform the physiological monitoring required by this SOP; and
- How to effectively implement the control measures required by this SOP and the possible consequences of disregarding them.

7.2 TRAINING FREQUENCY

7.2.1 This training shall be provided at the time of an employee's initial assignment to work in hot or cold environments. Key elements shall also be reviewed as appropriate during daily site safety meetings.

7.2.2 Supervisory personnel shall be provided the additional training within at least 30 days of being given supervisory responsibility.

7.3 DOCUMENTATION OF TRAINING

7.3.1 The training provider shall ensure that each employee attending the training sign an appropriate training log. A copy of the training log shall be kept in the employee's Health & Safety File and photocopied to the Corporate Health & Safety Manager per the requirements of H&S SOP-160 - Health and Safety Recordkeeping.

7.3.2 Additional training provided as part of the daily site safety meetings shall be recorded on the Daily Safety Meeting Checklist in the FormHASP macro.

ATTACHMENT A

HEAT AND COLD RELATED ILLNESSES

A.1 HEAT RASH (PRICKLY HEAT)

Heat rash may result from continuous exposure of skin to heat and humid air, and is aggravated by chafing clothes. In addition to being uncomfortable, heat tolerance is compromised severely during such conditions.

A.2 HEAT CRAMPS

Heat cramps are reputed to be caused by profuse perspiration with inadequate fluid intake and electrolyte replacement. Signs: painful muscle spasms and pain in the extremities and abdomen. Heat cramps are alleviated by rest and oral intake of electrolyte solutions (e.g., "sports drinks").

A.3 HEAT EXHAUSTION

Heat exhaustion is caused by increased stress on various organs to meet increased demands to cool the body. Signs include: shallow breathing; pale, cool, moist skin; profuse sweating; dizziness and lassitude. Heat exhaustion is usually alleviated promptly by moving the affected individual to a cooler area out of direct sunlight to lie down for a time. Keep the feet elevated.

A.4 HEAT STROKE

Heat stroke is the most severe form of heat stress. The body must be cooled immediately to prevent severe injury and/or death. Signs and symptoms include red, hot, dry skin; no perspiration; nausea; dizziness and confusion; strong, rapid pulse; coma. Relief is only possible by emergency measures which quickly reduce body temperature in order to avoid irreparable damage to the body, especially the brain. Victim should be moved to a cooler area out of direct sunlight. Have the victim lie down and keep the head elevated.

A.5 HYPOTHERMIA

Hypothermia results when energy reserves are exhausted by the bodies' attempt to maintain temperature. Once the cold reaches the brain, the person will exhibit impaired judgement and reasoning power. They will not realize this is happening and will eventually also lose control of their hands. The internal temperature will continue to drop, and, without treatment, this will lead to stupor, collapse, and death.

A.6 FROSTBITE

Frost nip, or incipient frostbite, is the condition characterized by sudden blanching or whitening of the skin (see Table III, Windchill Chart). Superficial frostbite is when the skin has a waxy or white appearance and is firm to the touch, but the tissue beneath is resilient. Superficial frostbite can be treated by (1) covering the cheeks with warm hands, (2) placing uncovered frostbitten fingers under the opposing armpit next to the skin, and (3) placing bare frostbitten feet under the clothing and against the skin of a companion. Deep frostbite is when tissues are cold, pale, and solid. Deep frostbite is an extremely serious injury. Where deep frostbite exists, it is essential to get the patient to a hospital as quickly as possible.