

APPENDIX I

**INSTRUCTION MANUAL FOR
TESTING**

IH Technican Statements (post)

Training

Convey the following in your own words: "The monitors are worn in the locations in the picture" [point to the pic of Kent wearing monitors]. "The monitors are a little uncomfortable, but I find them to be tolerable."

Once all monitors are placed, manually press the BP Cuff so they know what the BP test feels like. Say: "This will squeeze your arm pretty tight, so that it stops the blood flow briefly. During the day, you will have to stop working including walking when the cuff begins to pump up and let your arm dangle loosely to get a good reading. When it completes its cycle, the cuff will deflate and the unit will beep once or four times (you may not hear it). If it beeps four times, it will repeat the test in a short time because it did not get a good reading. To avoid that, be real still the first time it starts pumping up."

Testing

Hand the Participant their paper shoes. "Please put on your paper shoes. You can leave your socks on. Push your toes to the end of the shoe, and roll any extra fabric out at the heel." After the first Test day (3), you needn't repeat this, but watch to see that the shoes are placed on correctly.

Once shoed, "Let me get your weight." Obtain/record on Data Form. Insert the Thermometer probe completely and firmly into a probe cover.

"Now, let me take your temperature. Open your mouth a little so I can place this under your tongue. It will take a few seconds."

Completion of Testing

Finally, when they leave each day -- "Remember not to say anything specific about the computer tests to anyone at work."

When they complete the last day of testing-- "Remember, at work you can talk about what happens during the testing, but please don't say anything specific about the computer tests--just say 'in the computer tests, you have to remember numbers'--we want everyone to read the instructions without any hints about what to expect."

- 1) Behavioral Tests
- 2) Questionnaire

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- 2) Questionnaire

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- 2) Questionnaire

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- 2) Questionnaire

Work Level Definitions (IH Tech clipboards)

Hand-Light = Holding, taping, writing, wiring

-Moderate = Using small tools, tubes or hoses

-Heavy = Using a shovel, large tools or lifting

Arm - enter a number -- 1 = using one arm; 2 = working with 2 arms

-Light = Writing, wiring, using tubes or hoses

-Moderate = Using small tools or small equipment

-Heavy = Using a shovel, large tools or lifting

Trunk=any of several parts of the body other than the arms, hands.

-Light = Twisting or turning their body

-Moderate = Moving and empty wheelbarrow

-Heavy = Using a shovel, large tools (ground pounder), lifting

Order to Place Monitors (post)

- polar heart monitor
- activity (ankle / wrist)
- skin temperature / tape (6" long in X) to arm
- ear temperature/ have Participant squeeze hearing protector and hold in place for 60 secs
- blood pressure cuff

Minimeter Jacks

- 1) Ear - temperature**
- 2) Wrist - activity**
- 3) Ankle - activity**
- 4) Arm -temperature**

Activity Measures

XX:15 and XX:45

(when in tank farm or working in hot area)

WBGT/Ambient Temp

XX:30

(all day)

Heat Stress Study Schedule (Examiners/Post)

Day 1 Training

AM Description of Study (Consent Form)

Medical History Questionnaire

Fitness Test (1 Participant)

PM Behavioral Tests (not Balance, Dynamometer)

Day 2 Practice

AM Fitness Test (3 who did not take Fitness Test on Day 1)

PM Behavioral Tests (including Balance and Dynamometer)

Day 3 -- Day 4 -- Day 5

AM Behavioral Tests/Q /on:T, HR, BP, Act monitors/U sample

Lunch Questionnaire/U sample (5 min)/Verify HR working

PM Behavioral Tests/Q /off: monitors/U sample

Note

Take weight and oral temperature at all 3 sessions on Days 3-5

Workers on a Four-Day Week

Day 1 (Training) is on Friday, Saturday, or Sunday /off site

All other days remain the same, except that all the fitness tests are given on the first regular day (Mon or Tues)

Optional Day (non-work)

AM and PM Behavioral Tests (incl. Balance, Dynamometer)

+ Questionnaire on what they did that day

TESTING (EXAMINERS/POST)

The test day is divided into Pre-shift, Lunch, and Post-shift testing. Post-shift testing begins whenever the Participant ends work in the tank farm or in their assigned "non-work" activities.

Pre- and Post-shift Testing

- (a) Weigh-in
- (b) Oral temperature / minimiter monitor mark *
- (c) Balance / Behavioral Testing (water provided post-shift)
- (d) Pre- / Post-Shift Questionnaire
- (e) Monitor placement/removal
- (f) Urine collection

Lunch (Mid-Shift) Testing

- (a) Weigh-in
- (b) Oral temperature / minimiter monitor mark *
- (c) Mid-shift questionnaire
- (d) Urine collection

These schedules do not vary at all. Record any variances in the Study Log.

Balance/Behavioral Test Order. The first Participant to arrive and complete weigh-in (etc.) begins at the Balance Station. The subsequent Participants go to their assigned Behavioral Test Station where they work until they have completed all tests or until Kelly taps them on the shoulder to interrupt the behavioral testing and motion them to step to the Balance Station. Break into a session only between the Dual Task and the rest of the Behavioral Tests--DO NOT STOP THEM ONCE THEY BEGIN THE POST-DUAL TASK TESTS.

Minim�ter Jacks: 1)Ear-t; 2)wrist-ac; 3)ankle-ac; 4)Arm-t.

Information for Supervisors of Participants in Heat Stress Study ('96-'98)

What will Participants have to do?

Workers will participate in the study for one week for 35-45 minutes in the AM and 35-45 minutes in the PM. The first 2 days of the study are training, followed by 3 test days when they will:

- Wear 5 physiological monitors (for temperature, activity, heart rate, and blood pressure) during the entire work day
- Take questionnaires about symptoms of heat stress 3 times a day
- Take tests of memory, attention, strength, and balance 2 times a day
- Be weighed and have their oral temperature taken 3 times a day
- Give 3 urine samples per day to determine their body fluid balance

The AM tests will be given during or after the pre-job meeting (supervisor's decision) for 4 or 5 days, and the PM tests will be given after they complete their shift for 5 days; workers on a 4-day week may take the initial training day on the weekend (the study would pay for that time).

How will it Affect the Work Day?

In the morning, Participants will be in the study Test Trailer (located adjacent to the Change Trailer in their work location) for about 35 minutes of testing. If Participants can be excused early from the AM planning meeting, this might not affect their work schedule at all.

Every hour, the blood pressure cuff will inflate automatically, so they will have to stop working and stand very still for 30 seconds to get a good reading.

There should be no other effects on their work.

Heat Stress Study Schedule (Distribution)

Day 1 Training

AM Description of Study (Consent Form)

Medical History Questionnaire

Fitness Test (1 Participant) and Place Monitors

PM Behavioral Tests (45 min after work)

Day 2 Practice

AM Fitness Test/Place Monitors (the 3 not tested on Day 1)

PM Behavioral Tests (45 min after work)

Day 3 -- Day 4 -- Day 5

AM Behavioral Tests/place monitors*/U sample (35 min)

Lunch Questionnaire/U sample (5 min)

PM Behavioral Tests/remove monitors/U sample (35 min
after work)

*Temperature, Heart Rate, Blood Pressure, Hand & Arm activity. The "behavioral tests" include attention, memory, balance and grip strength tests. Participants will also be weighed and their temperature (by mouth) will be taken 3 times a day.

U sample--This is urine sample to determine the quantities of normal body fluids (it is not a drug test).

Workers on a Four-Day Week

Day 1 (Training) is on Friday, Saturday, or Sunday/off site.

All other days remain the same, except all the fitness tests are taken on first regular day (Mon or Tues)

Additional Option (if planned, we will confirm when we call to schedule). We may request to test you for 35 minutes in the morning and again in the afternoon on an additional non-work day (Saturday or Sunday). Compensation at time and a half is paid in cash (time and a half calculated from your rate) on Day 5/PM for time outside of work (about 1-1.5 hours).

Investigator, CROET"), acronyms (e.g., "SDL = Serial Digit Learning") or shorthand (e.g., "I/O error = Interface between PowerBook and DataSled caused an error box to appear.").

NOTE KEEPING SAFEGUARDS

However unlikely it may seem, the data that you record must be safeguarded against any alteration by others due to sabotage or claims to "ownership". There are a few simple things that can be included in your entries to a) indicate that the entries were made by an identified observer, and b) ensure the clarity of your entries.

After completing a page of entries, read over what has been written. As you review, ask yourself: Would your observations make sense to someone else who was not there or was not very familiar with the project? Were there any details left out (i.e., equipment #s, Ss ID#)? Is the header complete at the top of the page?

When making observations of humans, remember **NEVER TO RECORD ANY NAMES AS SUBJECT IDENTIFIERS** in your notes. **ALWAYS begin each entry with the subject ID #.** After making your initial identification, it's OK to use gender pronouns (i.e., she or he) as gender information has already been recorded in the data.

SPECIAL REQUIREMENTS

In some projects, additional review is required. The only current example is the EPA PD project. For that project, after observations have been made, a colleague should witness the observations. This is recorded by writing "This page read and understood by *Signature.*" in the header, next to the Examiner's (this page is complete) Signature.

TIME-SAVING GUIDES

Headers

At the top of each page, the date, Examiner's initials should be recorded in the outside margin (near the printed page number). The date should be written as DD Month 'YY (e.g., 7 July '96) so as to eliminate any ambiguity. Examiner's initials, in this case only, should be printed legibly. If there is more than one page in the entry for one session, write "continued" under the date in the outside margin.

On the first line of the page, write the project name (e.g., "PGW Clinic"). Leave room for verification and witness' signatures (see below).

Tables, graphs and sketches

If the same sort of information is repeated, it may be easier to record (and most certainly to read) in a table format (e.g., downloading data from multiple test sessions). Likewise, a diagram or graph may make your point more clearly. Although these are not necessary, remember you want your notes to be clear: using page layout tricks and sketches will help you illustrate your point.

References to related work

Very little observation happens in a vacuum; thus it is important to relate your observations to previous records. Therefore, it is completely appropriate to parenthetically mention similar observations (by page number), as well as where continuing observations of the session may be found.

Table of Contents (TOC)

The first few pages of the new log should be designated for the TOC. Estimate one line for each page in the notebook. The TOC should be maintained while the book is being filled. This will make it easy to find recent observations. Each entry into the TOC should include the date of the entry, a brief description (from the top of the page of the entry), and the pages it can be found.

Other Reference Materials

List related project materials in the Log, in the pages following the TOC. The most important is the Examiner's Reference Notebook: it includes the Procedures, Oral Instructions, Consent Forms and other relevant materials.

Glossary

Reserve the last few pages of the Log for an index of terms. Here, record any abbreviations or symbols that are not considered usual shorthand conventions (usual shorthand would include: @, Rx, Dx; but not: IFU, etc.) This would include any names (e.g., "WKA = Kent Anger, Principal

GENERAL PRINCIPLES OF NOTETAKING

Notes should be clear, concise and complete. The tone of the narrative should be unambiguous statements of "the truth" as observed by the scientist. The quality of notetaking should be just as good for the successes as for the failures.

It should be written immediately after work was performed and using the active voice.

Generally speaking, your audience should include you and the people involved with your project (who are not there), as well as anyone interested in the work you've done. **Someone should be able to pick up this book, perhaps 10 years from now, and repeat the work you did based on your descriptions... and arrive at the same observations.**

ALWAYS begin each entry with the subject ID #.

Write each page as a stand-alone document. Often pages are copied to share with others. They should get all the information they need (e.g., date, subject ID #, test, etc.) from the notations at the top and sides of the page. Use references (e.g., "continued on page 96" or "same question asked on 10 July '96- see page 116") to make it easy for others to look up related information.

If you make any changes, **be sure to initial any "deletions"**. (*You never delete anything. Put a single line through it and initial who made the change.*) If you are satisfied with what appears on that page *after it is complete*, **sign the top of the page**, near the header.

If the session is complete, but your notes end in the middle of the page, draw a line from the last line of data to the bottom of the page and write **"No more data on this page."**

Take the time you need to accurately record what may seem like trivial observations. In most cases, subjects can and will wait until you've finished your record-keeping before moving on.

Discuss what details need to be recorded in the Log with the people involved with the project- and what to do if anomalous situations arise. For example, if a subject is completing the shaping version of the BARS and is not sure what the task is about, the response to this question could affect the validity of the test. Recording exactly what was said is very important. On the other hand, giving directions to the vending machines is not relevant to the test session... unless the subject asks during the test session!

EXAMINER'S LOG NOTEKEEPING

INTRODUCTION

The following outlines recommendations from Howard M. Kinare's Writing the Laboratory Notebook that will be implemented in the recording of observations for human testing.

MATERIALS

Generally speaking, log books should have permanent, sewn bindings, ruled pages, printed page numbers, and contain acid-free paper. For most experiments, a grid ruled, carbonless notebook is ideal. Avery Dennison's National Brand (Chicopee, MA 01022) Computation Notebook (11 3/4" x 9 1/4", 4 x 4 Quad., 75 sheets- 43-648) is a great book, although you need to use reducing options when making copies. Some projects (e.g., EPA) will require that you use their book.

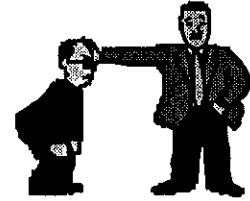
Blue or black ball-point ink should always be used. Sharpies, felt tipped, roller ball and fountain pen inks will bleed or fade in as little as 5 years. Nib size and ink color (between black or blue) is personal preference, although color can be used to quickly distinguish two experiments that may be running simultaneously.

When preparing a new Log to be used, identify the project name, grant number, people on the project (and their phone numbers), date observations began (& Log book # - if more than 1), and the Log's primary custodian on the cover. Each project (e.g., VA GWS, BARS NIEHS (Eval. & Norm.), UBC Heat Stress, EPA PD) should have their own log book. In some cases, a study within a project may need its own log book.

STORAGE

The notebook should be kept in a safe place, far from tissue or liquid samples, chemicals (liquid or powder) on the lab bench, drinks and food. A suspended bookshelf or file drawer are excellent places for your book to rest. Depending on the nature of your project, security and access issues should also be considered when choosing a "home" for your observation log.

| | | | |
|------------------------------------|--|---|---|
| Dependent behavior | Seek approval | <ul style="list-style-type: none"> • General compliment, then facilitate autonomous behavior by participant. | <ul style="list-style-type: none"> • Ask P. to evaluate performance, "See, you know how well you are doing." |
| Playful attitudes | Jokes, comments | <ul style="list-style-type: none"> • Remind P to concentrate on tasks, both need to work, results are relevant to P's health and to others in study. | |
| Passive attitudes | Indifferent, minimal participation, med-to-low performance | <ul style="list-style-type: none"> • Stop testing, assess attitudes towards testing. • Record in Examiner's Log. | <ul style="list-style-type: none"> • Discontinue. |
| Nervousness | Irritated, overreact, discuss every detail, intolerant of testing | <ul style="list-style-type: none"> • Ask for reasons for nervousness. | <ul style="list-style-type: none"> • Delay beginning testing until more at ease. • Record in Examiner's Log. |
| Criticism | Poorly organized tests | <ul style="list-style-type: none"> • Agree if any complaints are justified. Make best of situation and continue. | <ul style="list-style-type: none"> • If unjustified, tell P to concentrate on tasks. • Discontinue, eliminate data from analysis. |
| MECHANICAL FACTORS | | • MAKE NOTE IN EXAMINER'S LOG | |
| Wrong Positions | Position incompatible with P's abilities | <ul style="list-style-type: none"> • Be flexible. Allow P to adopt preferred position. | <ul style="list-style-type: none"> • Record in Examiner's Log. |
| Changes in operational procedures | Mistake of E or equipment <ul style="list-style-type: none"> • order • time to complete • part(s) omitted | <ul style="list-style-type: none"> • Continue until end of testing. • Administer at end of testing. | <ul style="list-style-type: none"> • Record in Examiner's Log. • Refer to Troubleshooting guide in Examiner's Reference. |
| ENVIRONMENTAL FACTORS | | • MAKE NOTE IN EXAMINER'S LOG | |
| Disturbances | Noises near testing area | <ul style="list-style-type: none"> • Stop immediately. Try to eliminate the source. • Repeat. • Record in Examiner's Log. | <ul style="list-style-type: none"> • If permanent condition, record in Examiner's Log. |
| GENERAL Mechanical – Environmental | | <ul style="list-style-type: none"> • Resume once obstacle removed/performance is adequate. • Record in Examiner's Log. | <ul style="list-style-type: none"> • If performance is poor, begin trial again. Note if performance improves in Examiner's Log. |



DEALING WITH PROBLEMS

| PARTICIPANT-RELATED FACTORS | | • MAKE NOTE IN EXAMINER'S LOG | |
|------------------------------------|--|---|---|
| Physical Impairment | Sight/hearing problems | <ul style="list-style-type: none"> • Ex reads test instructions. • Adjust physical arrangements. • Avoid embarrassment. | <ul style="list-style-type: none"> • Only give tests P can perform. • Discontinue. |
| Physical Discomfort | Illness | <ul style="list-style-type: none"> • Schedule new appt. • Record in log. • Determine reason for illness, if appropriate. | |
| Environmentally Induced Discomfort | Identify postures, settings, extremes of temp. prior to testing | <ul style="list-style-type: none"> • If can't resolve, discuss with P- ask to do best under circumstances. • Record in Examiner's Log. | |
| Lack of Understanding | Cognit./Lang. difficulties | <ul style="list-style-type: none"> • Repeat instructions. • Repeat trials. | <ul style="list-style-type: none"> • Interrupt- refer to PI. |
| Discomfort induced by failure | "My work is inadequate." Stops working. | <ul style="list-style-type: none"> • "This is a difficult task by nature. Please keep trying. The next one may be easier for you." | <ul style="list-style-type: none"> • IF NECESSARY... If performance adequate, reinforce the P's motivation. Record incident & feedback. |
| Emotional refusal of testing | Stops, doesn't feel like finishing. "I'm tired; this is too much like school." | <ul style="list-style-type: none"> • Re-explain the goals of the test. | <ul style="list-style-type: none"> • If can't see relation of tasks to goals, agree that they are not everyday experiences. But day-to-day functioning is a result of many separate mental functions working together-these tests evaluate them. |
| Devaluations of the tests | Interrupt work to comment about triviality | <ul style="list-style-type: none"> • Recognize fear and stress. Tests aim to protect people's health. The results are confidential from employers & acquaintances. | |
| Hostile attitude | Reaction in mid-testing | <ul style="list-style-type: none"> • Evaluate E's comments. Avoid negativism or minimizing performance. | |
| Malingering | | <ul style="list-style-type: none"> • | <ul style="list-style-type: none"> • Note in Examiner's Log. |



Data Shipping

to CROET:

W. Kent Anger, PhD
OHSU/CROET/L606
3181 SW Sam Jackson Pk Rd.
Portland, OR 97201

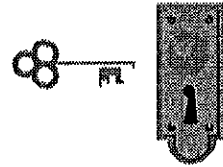
to MSU:

Ken Rosenman, MD
Michigan State University
Dept of Medicine
117 West Fee Hall
East Lansing, MI 48824-1316

URINE Specimens (UW):

Formatting IBM-Type Data Disks

1. While in DOS, put a blank disk into the floppy drive of the ThinkPad.
2. At the C:\>, type "format a:" and press enter.
3. "Insert a new diskette for drive A: and press ENTER when ready..." will appear. Press enter.
4. After format is complete, "Volume label (11 characters, ENTER for none)?" will appear. Name the disk "HAN..." followed by a unique, sequential letter (e.g., "HANa").
5. Label the disk with the unique letter combination.
6. Put the "Return to..." sticker on the larger label.
7. *Note: DOS formatted disks can be read on the Macintosh.*

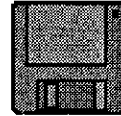


Data Storage/Lockup

When the data are copied, put both copies of the diskettes into the locked filing cabinet.

Deliver urine samples to Interpath Labs- Jan Rogers??????

End of Week compensation.



Downloading/Backing Up Data

Copy each day's electronic data onto an IBM and a MAC diskette (labelled with the day's date on post-it tag).

Make a copy of the diskette when all the day's data are loaded onto it (labelled backup with the day's date).

If any diskettes give error message, discard the diskette and get a new one.

Photocopy (both sides OK) all paper data and file for disposal after receipt verification at OHSU/MSU.

IBM procedure:

1. Open the main directory
2. Open the file manager
3. Put the diskette in the drive
4. Navigate to find the Participant ID directory
5. Drag the icon onto the "a:\\" icon in the upper LH corner of the window
6. Verify the files (tr001-tr005) have been copied

MAC procedure:

Drag data icons to floppy icon

U Washington Urine Specimen Procedure

Label the centrifugation containers or the centrifuge locations 1-4.

Place the date and Participant number on the shipping containers.

Pour the RNAase inhibitor solution into the centrifugation containers.

Take the urine used with the Chemstrip Dipstick and pour it into the centrifugation containers.

SET ANY SAFETY DEVICES (e.g., collars) and close the centrifuge.

Spin for _____ minutes.

Complete the UW Specimen Data Form and place it in the shipping container or outside, per instructions.

Remove the material and pour into shipping containers if required.

Store in shipping container with dry ice immediately and seal for shipment.

Ship to the the University of Washington.

Completion of Testing (IH Technician)

When testing is complete, thank the Participants and remind them to return 35 minutes before testing the next morning, or, on the final day, ensure that the Participant has received any pay due, and get them to sign a receipt. Thank them for participating and ask if they have any questions.

Finally, when they leave each day -- **“Remember not to say anything specific about the computer tests to anyone at work.”**

When they complete the last day of testing-- **“Remember, at work you can talk about what happens during the testing, but please don’t say anything specific about the computer tests--just say ‘in the computer tests, you have to remember numbers’--we want everyone to read the instructions without any hints about what to expect.”**

Urine Processing *[Complete Within 30 minutes of Collection]*

Chemstrip Dipstick

Wear latex gloves since you are working with body fluids (per CDC “universal precautions”) and place an absorbent kimwipe on the table.

Open the Chemstrip container, remove one stick for each Participant and close the container IMMEDIATELY with the original top (which contains a drying agent).

Dip the Chemstrip dipstick into the urine totally covers the area of the dipstick with stripes and remove it in LESS THAN ONE SECOND.

Draw the dipstick along the rim of the specimen container to remove any excess urine.

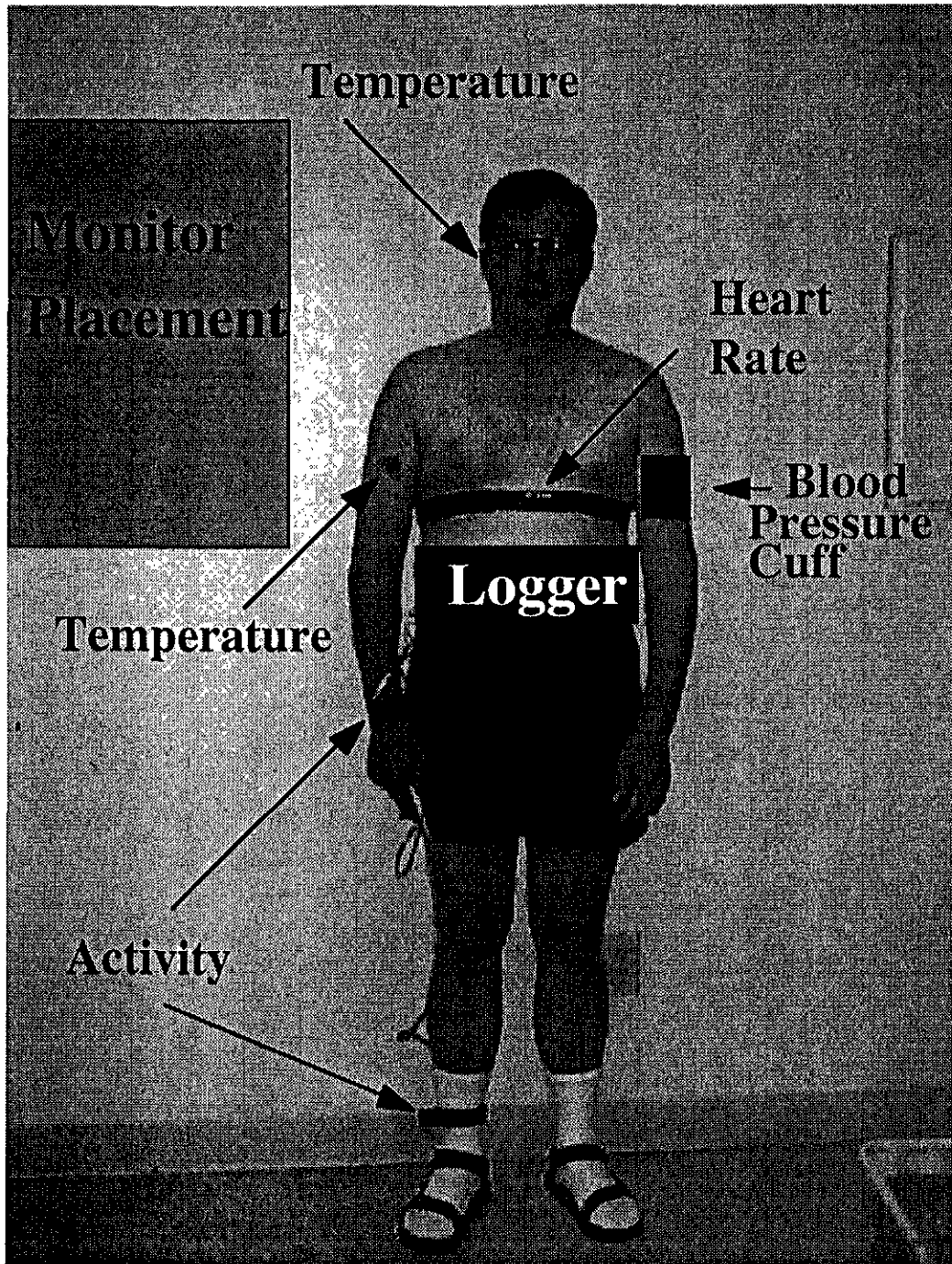
Turn the strip on its side and tap it ONCE on the absorbent paper to remove remaining urine and prevent cross-mixing of chemicals between the strips.

Start a timer IMMEDIATELY and compare the color for the pH (on the flat side of the strip) to the Chemstrip container to determine pH--record on the Monitor/Temperature Data Form, noting any uncertainty about the match.

When the timer reaches 60 SECONDS, read the Specific Gravity and record on the Monitor/Temperature Data Form, noting any uncertainty about the match.

If the readings are not completed in another 60 SECONDS, get a new Chemstrip dipstick and repeat the process.

Dispose of the Chemstrip dipsticks in the regular trash.

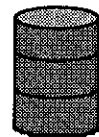


Completion of Testing (Kelly)

Give the Participant any pay due at the end of the Behavioral Testing and have them sign the Payment Receipt.

Placing Activity and Temperature Monitors [IH Technician]

1. Before the Participants arrive in the AM, enter the Temperature Monitor and Blood Pressure Cuff IDs on the Monitor Data Form for each Participant.
2. Place the monitoring equipment in the following order:
 - polar heart monitor
 - activity (ankle / wrist)
 - skin temperature /tape (6" long tape in X) to arm
 - ear temperature / have Participant squeeze hearing protector and hold in place for 60 secs
 - blood pressure cuff
3. Connect the plugs to the minimeter remote recorder
Jacks: 1)Ear-t; 2)wrist-ac; 3)ankle-ac; 4)Arm-t
and press the * "mark" button on the minimeter.
4. Place the minimeter remote recorder in the pouch and the BP monitor on the black belt (or the Participant's belt).
5. Connect the tube from the BP cuff to the BP monitor.
6. Record the time the minimeter * was pressed.
7. Help the Participant replace their shirt without disturbing monitors--verify that the skin temperature probe and ear plug remain in place.
8. Take weight and oral temperature; record data along with the time on the Monitor Data Form.



Urine Collection (IH Technician)

Label all urine cups with the Participant ID # and place them next to the tub with the Participant name label. Give them the cup as they depart the Behavioral Test room to be sure they get the cup with their ID number on it. When all tests are complete, place or remove the monitors, and say **"Please go to the bathroom and fill the container to just above the line."** When they return with the cup full, record the time you received the cup on the Monitor/Temperature Data Form.

"OK, now stand on the foam with your feet near the back of the outline just like before. Keep your eyes open, look at the "X" on the wall. Stand very still again for 30 seconds. Get ready, START."

Click OK to begin the trial--After 30 seconds (computer beeps),

"Over--Relax and step off the platform."

Eyes closed FOAM

1. Click in the trial description box and enter **"eyes closed foam."**

2. Click the **Start** box.

3. When you see the dialogue box, Click OK.

4. A box appears that says **"Acquisition starts after 5 seconds."**

"Step back on the foam on top of the platform. Look at the "X" and then, CLOSE YOUR EYES again, and pretend you are looking at the "X." Stand very still again for 30 seconds. Get ready, start.

Click OK to begin the trial--30 seconds (computer beeps).

"OK, this test is over. Begin Behavioral Testing at the computer."

Click **Save**.

Click **Finish**.

"Again, please stand in a comfortable position in the outline of the shoe--with your heels touching ."

When they are standing correctly,

"Again, look directly at the "X" on the wall that keeps your head the most level and stand as still as you can for 30 seconds.

Pause until they appear ready; prompt them if they fidget.

Say **"START."**

Now click **"OK."** [Record dynamometer and temperature]

After 30 seconds the trial is over. There is a 01 in the "seconds remaining" box.

"Over--Relax."

If OK, click **"Save"** to save data.

"Step off the platform."

Eyes closed

1. Click in the trial description box and enter "eyes closed."
2. Click the Start box.
3. When you see the dialogue box, Click **"OK."**
4. A box appears that says "Acquisition starts after 5 seconds."

"Return to the same place as before." [Pause while they do it.]

"Look at the "X" on the wall, and then CLOSE YOUR EYES.

Pretend you are looking at the 'X' even though your eyes are closed and keep your head in the same position. Again, stand as still as you can for another 30 second trial. Ready, START."

Click on OK to begin the trial [Record dynamometer and temperature if not already done]--after 30 seconds (computer beeps),

"Over--Relax. Step off the platform so I can place the foam on it.

Place Foam squarely on top of the platform.

Eyes open FOAM

Click in the trial description box and enter "eyes open foam."

Click the Start box.

When the dialogue box appears, Click **"OK."**

A box appears that says "Acquisition starts after 5 seconds."

8. Now click **"Check Communication"** to see if the platform is hooked up correctly. You will see a **"Received acknowledgement!"** screen.
9. Click **"OK"**
10. Now click **Acquire** to start collecting data.

Practice

1. Under trial there will be a trial number and a Participant number.
2. Click in the trial description box and type **"practice."**
3. Click on **Start** (subject) is off the platform.
4. A dialogue box says, **"Please have the subject step off the platform."**
5. Initialization follows.
6. Click **OK**
7. Now a box appears that says **"Acquisition starts after 5 seconds."**

"Please stand on the platform in a comfortable position in the outline of the shoe--with your heels touching."

When they are standing correctly: **Look directly at an 'X' on the wall that keeps your head the most level. "When I say 'start,' stand as still as you can for 30 seconds.**

Pause until they appear ready; prompt them if they fidget.

Say: **"START."**

Now click **'OK'** to begin acquisition.

After 30 seconds the trial is over. There is a 01 in the **"seconds remaining"** box.

"Over--Relax. Step off the platform so I can start the next trial."

If OK, click **"Save"** to save data.

Eyes open

1. Under 'trial' there will be a trial number and a Participant number.
2. Click in the trial description box and enter **"eyes open."**
3. Click on **Start** when Participant is off the platform.
4. A dialogue box says, **"Please have the subject step off the platform. Initialization follows."**
5. Click on **"OK."**
6. Now a box appears that says **"Acquisition starts after 5 seconds."**

6. Click **"Directory Info and Setup"** button in the bottom left corner. (The parameters are pre-set 4 trials, total duration 30 seconds, keystroke 5 seconds)
7. Enter your (Examiner) initials, last, middle and first.
8. Enter test date.

During the balance test, repeat the condition if, while recording, the Participant:

- Falls or steps off the platform
- Moves either foot
- Moves their head
- Talks
- Coughs or sneezes

Dynamometer

"Hold this device in your dominant--your strongest--hand at your side and grip this handle as hard as you possibly can, but do not jerk it. After a few seconds, release your grip and hand it to me." After the day 2 (baseline), you may abbreviate to: **"In your strongest hand, grip as hard as you can."**

"Thank you." Place the Dynamometer where they cannot see the result. Record result and room temperature during balance trial 1/2.

1. Enter the Participant's date of birth (use information from training).
2. Under **"Test Conducted by,"** Enter the initials of the Examiner.
3. Click on **"Create a directory"** button in the bottom right corner.
4. The directory will name the trial using the first letter of the last, middle and first name of the subject and the test date. You may override this and **enter the actual subject ID number under 'new name.'**
5. Click **"Create"** (not Create new)
6. Now you are back to the info sheet. **Check** that subject initials, test date, subject height, gender and examiner initials are correct.
7. Click **"OK"**

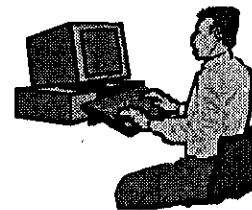
Remove the thermometer, eject the probe cover, and READ THE TEMPERATURE, then replace the probe in the base unit (left slot).

Record the temperature on the Data Form, and add the time the measure was taken. (If you forget, press the "pulse time" to re-view the temperature reading.)

Press the minimiter MARK asterisk (verify the beep); this should occur immediately after the oral temperature was recorded--note the time on the Data Form if over a minute later than the oral temperature time.

Verify that the Heart Rate monitor is working by placing a polar watch next to the person's chest HR monitor and place a check mark on the Monitor/Temperature Data Form--rewet or fix it if it is not.

If needed per Kelly's signals, "Wait for the Balance trial to end."



Behavioral (Testing)

1. Set up BARS prior to Participant arrival, so that they are ready when the Participants arrive. See setup instructions (p. 13) to set up if not already done.
2. Place the appropriate Symptom questionnaires at all (4) test stations prior to Participant arrival.
3. Post-shift, place the Participant's glass of cold water at their Behavioral Test Station.
4. VERIFY that the Questionnaire is completed when they start to leave.

Balance (Testing)



Preparation (before Participant arrives/begins)

1. Power up computer (gray switch on left side) -- you'll see c:\>
2. Type "win"
3. Double click on Accusway, then double click on the Swaywin icon.
4. Under menu heading Action, choose Acquisition
5. Now you are in acquisition set-up.

WBGT/Ambient Temperature (IH Technician)

Record the WBGT and ambient temperature every 30 minutes, at the half hour on the Temperature Data Form, and the time the temperature is recorded.

Weight and Oral Temperature (IH Technician)

Cautions when testing in the trailer: Once the first Participant has begun Balance testing, be alert to the next Participants. They must not enter the trailer or walk in the trailer while a Balance trial is in progress. Watch Kelly for signals to wait for a trial (they are 35 seconds long) and signal Participants to wait or enter the trailer.

General Caution: Once a Participant begins Behavioral Testing and until the final Participant has completed Behavioral Testing, do not speak above a whisper and avoid speaking at all to the extent possible.

Hand the Participant their paper shoes. **"Please put on your paper shoes. You can leave your socks on. Push your toes to the end of the shoe, and roll any extra fabric out at the heel."** After the first Test day (3), you needn't repeat this, but watch to see that the shoes are placed on correctly.

Once shoed, **"Let me get your weight."** Obtain/record on Data Form.

Insert the Thermometer probe completely and firmly into a probe cover.

"Now, let me take your temperature. Open your mouth a little so I can place this under your tongue. It will take a few seconds."

Place the thermometer under their tongue and touching the base of the mouth and the gums at the back of their teeth (see posted picture). Watch the readout area to verify that the wheel is still spinning (indicating tissue contact) until you hear a tone and see a temperature appear in the readout.

grading related activities into these categories. If at all uncertain, use the "reference" numbers on the last line to provide detail.

Hand-Light = Holding, taping, writing, wiring

-Moderate = Using small tools, tubes or hoses

-Heavy = Using a shovel, large tools or lifting

Arm - enter a number -- 1 = using one arm; 2 = working with 2 arms

-Light = Writing, wiring, using tubes or hoses

-Moderate = Using small tools or small equipment

-Heavy = Using a shovel, large tools or lifting

Trunk=any of several parts of the body other than the arms, hands.

-Light = Twisting or turning their body

-Moderate = Moving and empty wheelbarrow

-Heavy = Using a shovel, large tools (ground pounder), lifting

At the bottom of the Activity Form, record the numbers (1-4) of the Participants still working at the __:00 or __:30 mark of the hour which follows the time the Form was completed. "Working" is defined as the Participants are (1) in a work area (e.g., tank farm). Not working means they have exited the work area (e.g., entered the Change Trailer or have departed to a shop or cool area); workers who have departed the work area do not need to be followed for activity measurements, although their absence should be noted on the Activity Form linked to the reference numbers at the bottom.

Reliability measures will be made on frequent occasions (10-20% by a second IH Technician (when available) or by Kelly (who must remain outside the fence so that predetermined times and hand signals will be needed to accomplish these measures). Reliability measures must be made independently--without any discussion between raters while filling out the Activity Form. The sole exception is to identify the time point for the "snapshot" for each Participant--"mark" or "now" so you each look at the same point in time. Arm movements can be used to replace "mark" when the two raters are distant from each other (as will be the case with Kelly).

Use a pen to make all recordings. To fix an error, strike through it once--if a correction is needed, write it as near the space as possible.

Activity Monitoring (IH Technician)

At the top of the Activity Form, fill in the ID's of the Participants for the day, and enter a unique identifier for each Participant to facilitate observation (e.g., pocket color, hat color, or write numbers on their Anti-C's -back and arm). Determine the clothing (for anti-C's enter the number worn) for the day's tasks for each Participant and enter this information on the relevant row of the Activity Form.

The leftmost column of the Activity Form identifies the information and behaviors collected on each Participant. All other columns are assigned to Participants, numbered 1 through 4 (four is the maximum number of Participants that can be tested at any given time). Data on the bottom half of (the rows on) the Activity Form may remain stable and therefore may be recorded only in the initial observation (for all 4 Participants; or the first 4 columns) of an Activity Form. Draw a line across the Form to indicate that these events continued.

Initiate observations at 15 minutes and 45 minutes after each hour when any of the day's Participants are in a tank farm/hot work area (record the actual time the observations begin on the top left of the form--following "Time" on the top left of the Form). Take "snapshot" views of each Participant from a viewpoint from which you can readily observe each Participant (e.g., in the farm). Work rapidly down each column on the Activity Form, and immediately move to the next column until the page is complete. It should take 5-8 minutes to complete the page. Mark the time the Form is completed on the bottom left of the Form. If a Participant stops working (i.e., enters the Change Trailer or exits the hot area), before you initiate recordings or during recordings on a given Activity Form, so indicate in a note using the reference number in the final lined row of the Form.

Line by line notes:

For most lines, a check mark is required if the activity/event is occurring and the box is left blank if the activity/event is not occurring.

Move?- is only filled in if standing or stooped (under posture) is checked. Are they moving?

With load - is for estimating any load (in pounds) the person is lifting or carrying.

The hand, arm and trunk items are defined to reflect the level of work exertion and are identified by example. Judgment is needed for

TESTING

Participants are given instructions in training; only brief directions should be needed for testing--after Day 2. Conversation, aside from pleasant, positive social interaction, should be minimized.

The test day is divided into Pre-shift, Lunch, and Post-shift testing. Post-shift testing begins whenever the Participant ends work in the tank farm or in their assigned "non-work" activities.

Pre- and Post-shift Testing

- (a) Paper shoes on / Weigh-in
- (b) Oral temperature / minimeter monitor mark
- (c) Strength / Balance / Behavioral Testing (water provided post-shift)
- (d) Pre- / Post-Shift Questionnaire
- (e) Monitor placement/removal
- (f) Urine collection

Lunch (Mid-Shift) Testing

- (a) Paper shoes on / Weigh-in
- (b) Oral temperature / minimeter monitor mark / verify HR working
- (c) Mid-shift questionnaire
- (d) Urine collection

These schedules do not vary at all. Record any variances in the Study Log.

Balance/Behavioral Test Order. The first Participant to arrive and complete weigh-in (etc.) begins at the Balance Station. The Subsequent Participants go to their assigned Behavioral Test Station where they work until they have completed all tests or until Kelly taps them on the shoulder to interrupt the behavioral testing and motion them to step to the Balance Station. Break into a session only between the Dual Task and the rest of the Behavioral Tests--DO NOT STOP THEM ONCE THEY BEGIN THE POST-DUAL TASK TESTS.

"At work it is OK for you to talk about what happens during the testing, but please don't say anything specific about the computer tests--just say 'in the computer tests, you have to remember numbers--they asked me not to say anything more.' This is because several other people have volunteered to be in the study, and we want everyone to hear and read the instructions without any hints about what to expect.

[For anyone asked to be tested on the weekend, "There is a Sign-in sheet for the weekend day. Each person has their own, and it will be in the room where you weigh in. Put the time you arrive as soon as you arrive, and put the time you leave when you turn in your urine sample. If you forget, we will estimate it for you. You will receive your pay (time and a half calculated from your regular pay rate) in cash at the end of the week when you turn in your urine sample; we will ask you to sign a receipt for the money."]

"Do you have any questions? OK, see you here tomorrow." And thank you again for volunteering for this study--we know you are going to a lot of extra work to participate."

When you have completed both the Balance test and the Computer Tests, and the PRE-SHIFT Questionnaire, _____ [IH Tech] will place the monitors on you to measure temperature, Blood Pressure, Heart Rate and activity. Then you will give a urine sample by filling a cup like this [show one] in the bathroom outside. Please don't go to the bathroom before testing so you can fill this cup at the end of testing. Then you can go to the Change Trailer and on to work. **YOU WILL KEEP THE MONITORING EQUIPMENT ON ALL DAY AND THROUGHOUT OUR TESTS AT THE END OF THE DAY."**

"During the work day, DO YOUR SCHEDULED WORK IN A NORMAL MANNER. We will be observing and recording your work frequently during the day from inside or outside the fence, so we can relate your activities during the day with the activity monitor you will be wearing. The IH Technician [or name] will do this and I or someone else will do duplicates to check on their accuracy."

"At lunch, as soon as you leave the Change Trailer, come right here where the IH Technician [or _____ name] will weigh you, take your temperature--by mouth, and have you fill out a MID-SHIFT Questionnaire. The questionnaire will be at your computer Test Station. Even if you don't have any of the symptoms on the questionnaire, you still need to fill it out. We will also check the monitoring equipment during that time and give you another urine cup to fill before lunch, so please don't go to the bathroom before coming to the test trailer and giving your urine sample. This will only take about 5 minutes out of your lunch time."

"After lunch, return to work as usual and complete your work day as usual. In the afternoon, as soon as you enter the Change Trailer, get dressed quickly and come right out to the Test Trailer. It is important that you start testing right away. We will have water for you to drink at the computer Test Stations. But before you drink anything, we will weigh you and take your temperature. We will record the time from when you stop work until you start testing and throughout the tests because this is a critical factor in analyzing the data. And finally, we will ask for another urine sample, so please don't stop at the bathroom before testing.

TWO PARTICIPANTS

When you arrive here, take off your shoes and put your paper shoes on. They will be on the table next to the tub with your name [demo it if possible]. Then, _____ [IH Tech] will take your weight--the scale will be in the other room--and your temperature (with this thermometer) [show one]. Then look to me--I will be sitting in front of the Balance Platform. If I am testing someone at the Balance Platform, wait until I signal you to enter the room because this test is very sensitive to vibration--like someone walking. The IH Technician will help coordinate this.

Once I motion to you, go right to your Behavioral Test Station and immediately begin the tests-- it will be set up for you to start by pressing any button (this instruction will be on the screen). Continue working until you are done and then sit in your chair and watch me until I motion you to begin the Balance Test. Remember to not talk when you are in this Test area if anyone is being tested at these computers. Noise or distractions have a very serious effect on the quality of the data."

ONE PARTICIPANT

When you arrive in the Trailer, take off your shoes and put your paper shoes on. They will be on the table next to the tub with your name [demo it if possible]. _____ [IH Tech] will take your weight--the scale will be in the other room--and your temperature (with this thermometer) [show one]. Then, I will begin by testing you on the Balance Platform. Then, you will go right to your Behavioral Test Station to begin the tests--it will be set up for you to start by pressing any button (this instruction will be on the screen). Continue working until you are done and then sit in your chair and watch me until I motion you to begin the Balance Test."

Continue here for all Participants:

Fill out the PRE-SHIFT Questionnaire [hold one up] AFTER you complete the tests on the computer. It will be on the table next to the computer; fill it out and leave it there--I will get it after you have left.



Rest-of-Study (Practice/Day 2 PM)

At the end of the PM Practice day session (Day 2):

“The next 3 days will be regular work days. After you finish the pre-job meeting, come directly here. Again, your supervisor should know this and may be willing to excuse you early from the pre-job meeting and the IH Technician [or ____ name] should be there to help.”

Read the appropriate following section--depending on whether you have 3 or 4, 2, or 1 Participant(s) for the week.

THREE OR FOUR PARTICIPANTS

“When you arrive here, enter the other room, take off your shoes and put your paper shoes on. They will be on the table next to the tub with your name [demo it if possible]. The IH Technician will help take your weight and your temperature (with this thermometer) [show it]. Next, look to me--I will be sitting in front of the Balance Platform. If I am testing someone at the Balance Platform, wait until I signal you to enter the room because this test is very sensitive to vibration--like someone walking. The IH Technician will help coordinate this.

Once I motion to you, go right to your Behavioral Test Station and immediately begin the tests--it will be set up for you to start by pressing any button (that instruction will be on the screen--‘press any button to start’). Continue working until you are done and then sit in your chair and watch me until I motion you to begin the Balance Test. In order to save time, I may stop you after your first test--the one with the small dots in the boxes--by tapping you on your shoulder. However, do not stop working on the tests or turn around to see if I am about to stop you--just keep on working on the tests. Also, remember to not talk when you are in this Test area if anyone is being tested at these computers. Noise or distractions have a very serious effect on the quality of the data.”

"Over--Relax. Step off the platform so I can place this foam on it.

Place the foam squarely on top of the platform.

"OK, now stand on the foam with your feet near the back of the outline just like before, but be careful because the foam makes it a little wobbly. Keep your eyes open, and look at the "X" on the wall.

"Now close your eyes for a few seconds."

After a few seconds, "OK, open your eyes. That will be the final trial on the Balance Platform for today. You will have 5 trials during the test days.

"You can get off the platform and put your shoes back on. Please put the paper shoes underneath your testing station for next time. The IH technician [or name] will have you put the paper shoes on in the next room for your weigh-in each time during the next three days."

Send them to their Behavioral Test Station and tap on the shoulder the Participant who finishes the SAT/Dual Task next, and repeat the above instructions. Let them complete their tests and get the last 2 Participants to do the balance practice following the BARS instructions.

"Next, the Balance test. This platform will test your balance. It will take about 7 minutes during testing tomorrow and the rest of the week. Today it will be a lot quicker because I will only show you what to do--I will not collect any actual data."

"Please stand on the platform in a comfortable position in the outline of the shoes--with your heels touching."

When they are standing correctly: **"Look directly at an 'X' on the wall--the one that keeps your head the most level. When I say 'start,' I want you to stand as still as you can for 30 seconds. The computer will beep for 30 seconds, then I will say 'over.' Then you can step off the platform while I set up to repeat the test a few times. OK?"**

"During this test, I will repeat the trial if you:

- Fall or step off the platform**
- Move either foot**
- Move your head**
- Talk**
- Cough or sneeze**

"OK--Relax. Step off the platform--I will have you do this five times during each test period, and you must be off the platform for me to start each of those trials--so the platform can zero itself--it is like a scale to measure balance.

"Again, please stand on the platform in a comfortable position in the outline of the shoes--with your heels touching.

When they are standing correctly, **"Again, look directly at the "X" on the wall--and CLOSE YOUR EYES. Pretend you are looking at the 'X' even though your eyes are closed and keep your head in the same position."**

After about 5 seconds,

Balance Testing (Practice-Day 2/PM)



"This afternoon, you will take the Behavioral Tests with only brief instructions--much shorter than yesterday. However, I will add in practice on the Balance and strength tests. This is how the rest of the test days will go. If all of you arrive at the same time, the first person to complete the weigh-in in the next room will take the Balance test, so you will come over here [point to platform]. Everyone else will work on the Behavioral Tests at the computer screen. I may interrupt one person after the first test is done, but you should just work away unless I tap you on the shoulder. Concentrate on those tests because they take real close concentration. So, _____ [pick a Participant] come over here to the Balance Platform, and everyone else get started."

Dynamometer

"First, the strength test. Hold this device in your dominant--your strongest--hand at your side and grip this handle as hard as you possibly can, but do not jerk it. After a few seconds, release your grip and hand it to me."

"Thank you. This is the measure of your strength [show them the dial], but I won't show you your result during study." Set the Dynamometer down so they cannot see the dial.

"Now, please take your shoes off and put on these paper shoes. You can leave your socks on. Push your toes to the end of the shoe, and roll any extra fabric out at the heel." [Place the chair for them to sit.]

Weight and Height

"Stand on this scale so I can measure your weight and height. During the testing, you will be weighed in the morning, at lunch and in the afternoon in this room by the IH Technician [or name] working on the study. He will do that in the next room and you will put on your paper shoes in there, too--before you are weighed."

Measure the Participant's weight and height, and record them on the Data Form.



Behavioral Testing (Training/Day 1 PM)

"Now, you will learn to take the behavioral performance tests on this computer. They are tests of memory and attention. Each time you are tested, you will be at the same computer at the same Test Station. Your name will be at your station for the week.

"Each test begins with instructions and a brief practice period. You respond by pressing the numbered buttons. If you need glasses to read, put them on now or place them on the table to be ready to use them. If you have any questions, please ask me, but the instructions are pretty clear. Today and during the study, do not talk to other Participants during testing, just concentrate on the tests you are taking. Some of them last a long time--they are testing your attention--while others test your memory, coordination and response speed. It will take 30-35 minutes."

After they have completed the BARS tests, ask:

"Do you have any questions about how to complete these tests?"

"You will be taking the same tests every day, although the memory tests will change a little each time you take them so that you are not learning the same numbers over again."

Lastly, we will be measuring the temperature in your ear this week. This is the best measure of your internal temperature we are using, and the data are critical to the success of this study. To get the best data, your ears need to be wax-free. Have you noticed any ear problems such as drainage?" [If no, proceed; if yes, beep Ken Rosenman and confer.] "Here is a kit for you to use for the next two nights. You need to tilt your head over like this [demo] put 5 drops in your ear, then tilt your head the other way [demo] and put 5 drops in your other ear. Then gently flush out your ear with warm water in a rubber bulb ear syringe [demo]. Do you have one of these at home?" If not, give them one. do that tonight and again tomorrow night for us to get the best results.

Fitness Test

Before the Participant arrives, calibrate the bike. The red line on the pendulum weight = 0 on the workload scale.

"This test will measure your fitness. You have to pedal this bike for a few minutes until you reach a predetermined heart rate."

Adjust seat height. When the pedal is at its lowest point the knee should be straight, with the ball of the foot on the pedal and the leg stretched. Record the seat position for re-testing.

Set the metronome at either 50 or 60 bpm and allow the Participant to pedal freewheel (no load) for a minute to get the pace.

After working for 1 minute without resistance, set the initial workload at 150 kgm/min (0.5Kp).

Allow the participant to work at the first workload for 3 minutes. Check the resistance guide. Heat and friction may cause it to slip a bit.

Measure and record the heart rate at 2:00 and 3:00. The difference should not vary more than five beats. If it does, extend the ride for an extra minute, or until a stable value is obtained. Thus, the participant will be riding for more than 3 minutes, until a heart rate has been measured.

Change the work load. No need to hurry. Use the key to determine workload for each interval. BE CONSERVATIVE. It's better to give too little than too much.

| 1st Workload | Heart Rate | 2nd Workload | 3rd Workload | 4th Workload |
|-------------------|----------------------|-------------------|-------------------|--------------------|
| 150 kgm 0.5 Kp | less than 80 bpm | 750 kgm 2.5 Kp | 900 kgm 3.0 Kp | 1050 kgm 3.5 Kp |
| 150 kgm 0.5 Kp | 80-89 bpm | 600 kgm 2.0 Kp | 750 kgm 2.5 Kp | 900 kgm 3.5 Kp |
| 150 kgm 0.5 Kp | 90-100 bpm | 450 kgm 1.5 Kp | 600 kgm 2.0 Kp | 750 kgm 2.5 Kp |
| 150 kgm 0.5 Kp | more than 100 bpm | 300 kgm 1.0 Kp | 450 kgm 1.5 Kp | 600 kgm 2.0 Kp |

After the test is complete, allow the participant to cool down by riding with no resistance until they reach a heart rate of 100.

Calculate predicted maximum performance (in example, 180 bpm for age) and calculate maximum oxygen uptake from table on page 104 of Y's Way to Physical Fitness (3rd ed.).

Body Composition Assessment/FEMALE

"Next, we're going to measure your body composition--to estimate what proportion of your body mass is lean and what proportion is fat. I'll be testing the skin on the back of your arm, along the triceps muscle; above your hip, and your stomach.

Have you eaten a large meal or exercised vigorously in the past 2 hours? [If yes, reschedule practice for 2 hours since the event.] OK, Please take off your shirt. Which would you say is your dominant side---the side with the foot you use to kick a ball or hand you throw with? OK, we'll measure that side. Please roll up the sleeve of your shirt (a tank-top tee maybe OK to leave on) and loosen your pants to your hip, so I can see your belly button. I'm going to wipe this alcohol swab on your arm, hip and stomach where we'll measure, it may be cold. OK, please stand straight with your arms relaxed at your side. This may pinch a little."

Locate, top of arm bone at the shoulder and elbow joint, visualizing a line between them. Mid-way between the points take the skinfold, parallel to the length of the arm, being careful not to grab any muscle, just the skin and fatty tissue that pulls away from the body. Release the calipers on the skin fold with the handle parallel to the floor. Record "Tricep 15mm".

Locate the hip bone at the middle of the side of the body. Just above the hip, at an oblique angle, take the skinfold, being careful not to grab any muscle, just the skin and fatty tissue that pulls away from the body. Release the calipers on the skin fold with the handle pointing to the ceiling. Record "Suprailliac 14mm."

Locate the umbilicus. 1"-2" lateral to the umbilicus, take the skinfold parallel to the length of the body, being careful not to grab any muscle, just the skin and fatty tissue that pulls away from the body. Release the calipers on the skin fold with the handle parallel to the hips. Record "Abdominal, 14mm."

"I'm going to repeat the measures a couple more times to make sure they're correct." Repeat the skinfold measurements. If there is a difference of more than 1 mm, a third round of measurements is necessary. Take the mean of the two closest readings for each site.

Body Composition Assessment/MALE

"Next, we're going to measure your body composition--to estimate what proportion of your body mass is lean and what proportion is fat. I'll be testing the skin on your back, just below your shoulder blade; on the back of your arm, along the triceps muscle; and on your chest, just below the arm pit.

Have you eaten a large meal or exercised vigorously in the past 2 hours? [If yes, reschedule practice for 2 hours since the event.] OK, Please take off your shirt. Which would you say is your strongest side--the side with the foot you use to kick a ball or hand you throw with? OK, we'll measure that side. I'm going to wipe this alcohol swab on your back, arm and, chest where we'll measure, it may be cold. OK, please stand straight with your arms relaxed at your side. Now place your knuckles on the small of your back.

Place the Participant's hand so the scapula is poking out from their back. Locate site just below and parallel to the scapula to take the fold.

"OK, put your arm to your side. This may pinch a little."

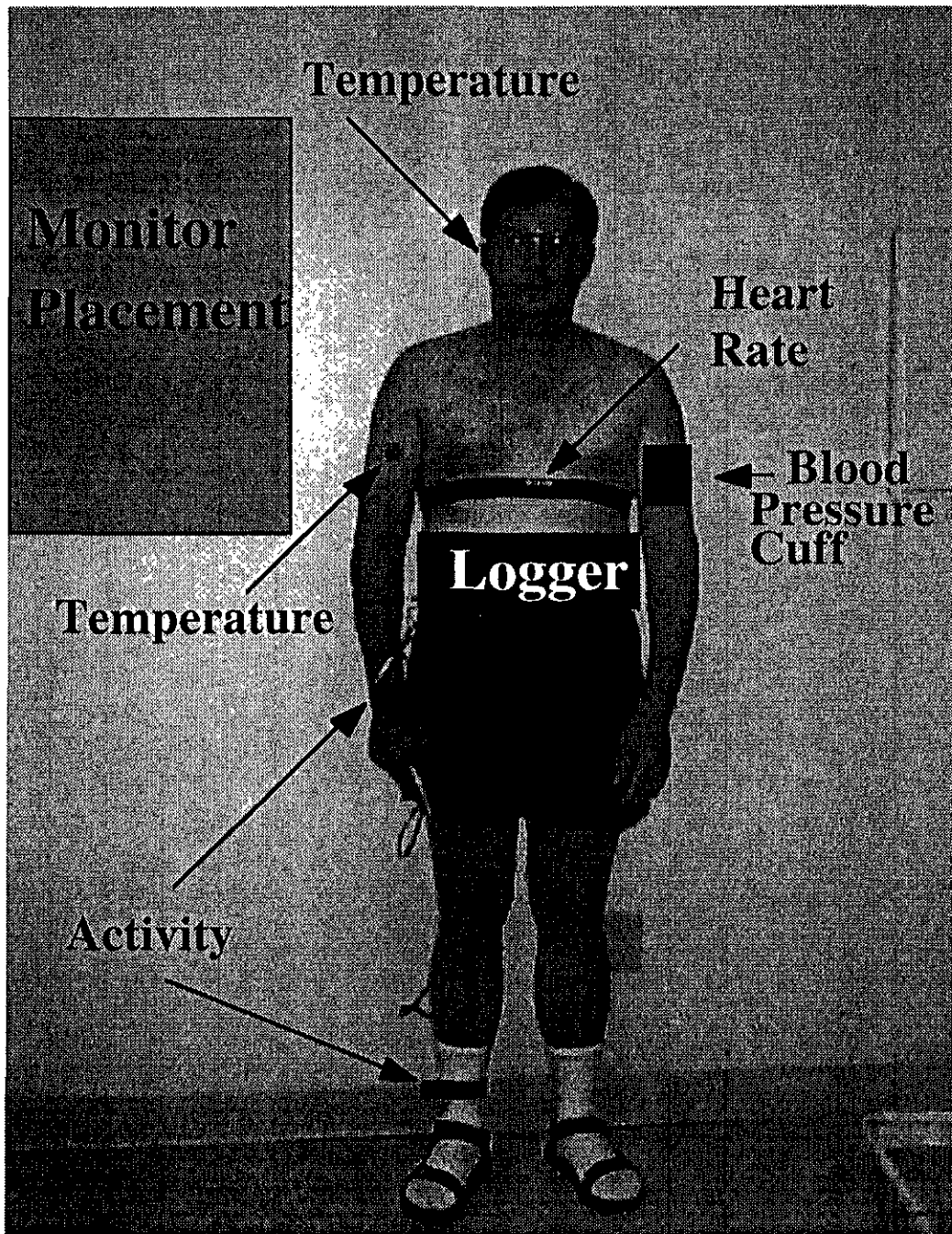
Take the fold, being careful not to grab any muscle--just the skin and fatty tissue that pulls away from the body. Release the calipers on the skin fold with the handle pointing to the top of the shoulder. Read the number to the IHT to record "Subscapular 12mm".

Locate top of arm bone at the shoulder and elbow joint, visualizing a line between them. Mid-way between the points take the skinfold, parallel to the length of the arm, being careful not to grab any muscle, just the skin and fatty tissue that pulls away from the body. Release the calipers on the skin fold with the handle parallel to the floor. Read the number to the IHT to record "Triceps 10mm".

Locate top of arm bone at the shoulder and the nipple, visualizing a line between. Mid-way between the arm pit and the nipple, take the skinfold, being careful not to grab any muscle, just the skin and fatty tissue that pulls away from the body. Release the calipers on the skin fold with the handle pointing to the ceiling. Read the number to the IHT to record "Chest 14mm."

"I'm going to repeat the measures a couple more times to make sure they're correct." Repeat skinfold measurements. If there is a difference of more than 0.5mm, a third round of measurements is necessary. Take the mean of the two closest readings for each site.

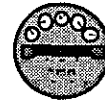
you will have to stop working including walking when the cuff begins to pump up and let your arm dangle loosely to get a good reading. When it completes its cycle, the cuff will deflate and the unit will beep once or four times (you may not hear it). If it beeps four times, it will repeat the test in a short time because it did not get a good reading. To avoid that, be real still the first time it starts pumping up."



Location of temperature, HR, BP and activity monitors, and the logger.

[The IH technician should have negotiated the time they can leave the job (like after leaving the Change Trailer) with the PIC/supervisor the previous week.] **"If you don't complete testing until after your regular work time, inform your supervisor who will arrange for you to be paid for that time. Tomorrow, in the AM, those who do not take the Fitness Test (on the bicycle) today will need to come here during or after the pre-job meeting to take that test. You should leave during the pre-job meeting if possible--that may be your PIC's call, but the IH technician [name] will make the arrangements. We have given your supervisor or PIC this information and they should realize that if you are not excused from that meeting, you will get to the change trailer about 35 minutes late."**

Placing Monitors [IH Technician]



Training (Day 1) and Practice (Day 2)

On Day 1 (Training), one Participant will take the Fitness Test in the AM session; and on Day 2 (Practice), the remaining Participants will take the Fitness Test in the AM Session.

Convey the following in your own words: **"The monitors are worn in the locations in the picture"** [point to the pic of Kent wearing monitors]. **"The monitors are a little uncomfortable, but I find them to be tolerable."**

Place the Polar heart rate monitor on the Participant [males only] selected to take the Fitness Test first. Decide with Kelly if they will take the Fitness Test immediately, or if you will place all the monitors on the Participant before they begin the Fitness Test.

Place the monitoring equipment in the following order:

- polar heart monitor
- activity (ankle / wrist)
- skin temperature /tape (6" long tape in X) to arm
- ear temperature / have Participant squeeze the hearing protector and hold it in place for 60 seconds
- blood pressure cuff

Once all monitors are placed, manually press the BP Cuff so they know what the BP test feels like. Say: **"This will squeeze your arm pretty tight, so that it stops the blood flow briefly. During the day,**

"All of your data will be completely confidential. Only the study staff will see your individual results. I will write an ID number on your Consent Form next to your name. This will be returned to study coordinator Buck Cameron in Seattle where it will be kept in a locked file cabinet.

Although we will post your name at your test station and in the monitor setup area, your name will not appear on the data files, so that anyone who sees your results will not know that they are your results. We plan to test about 100 people during the next three years, and the data from each year will be published as a group--not individually.

"PLEASE DO YOUR BEST ON ALL OF THE TESTS IN THIS STUDY. YOUR ACTIVE PARTICIPATION IN THIS STUDY IS NEEDED FOR US TO GET ACCURATE DATA ABOUT HEAT STRESS." Read this slowly, clearly.

Baseline (Medical History) Questionnaire

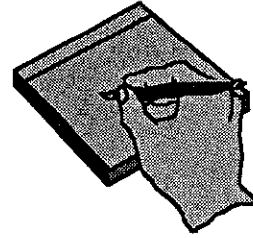
Put the Participant ID number on the Baseline Questionnaire.

"First, please fill out this medical history."

Check for EXCLUSION bases: Wears pacemaker, recent heart attack

"OK, thank you. I will ask one of you--Kelly, pick him/her now--to take the Fitness Test this morning. The others will take the fitness test tomorrow morning. Have any of you exercised or eaten a large meal in the last 2 hours? [Kelly to select on this basis--those who say yes to this are automatically deferred to the next AM for the Fitness Test and requested--"Please do not eat a big meal or exercise for 2 hours before coming to work to make the Fitness Test valid." For the remaining Participants, you might ask "does anyone need to get right out to work now?" and select on that basis.]

"At the end of your shift today, all of you need to return for training on the behavioral tests--it will take about 45 minutes and we will transport you back to your check out location when you are done.



Consent Form

Kelly: "Thank you for volunteering for this study of people working in high-heat and lower-heat conditions."

"First, you need to review this Consent Form and sign it on the last page to participate in this study. I can answer questions about the Consent Form."

After they sign the Consent Form, VERIFY and witness the SIGNATURE.

"Thank you. I will read the instructions to make sure that I say exactly the same thing to each person in the study.

"Let me review the main points outlined in the Consent Form:

- The purpose of this study is to learn more about the effects of heat.
- During the week, we will give you a number of tests, some of them several times.
- Today and tomorrow, we will: (a) assess your fitness, (b) give you a medical history form to fill out, (c) teach you how to take all the tests, and (d) show you how to wear the monitoring equipment for this study.
- During the week, you will have activity, temperature, heart rate, and blood pressure sensors placed on you [show the picture of Kent wearing the monitors], and we will give you tests of balance, grip strength, memory and attention twice a day. Also, we will measure your temperature (by mouth) and weight and have you give a urine sample three times a day.

"Your full participation is important to us and to the quality of the results in our study. However, even though you have signed the Consent Form, you can quit the study at any time without any cost to you. Unfortunately, any data from the tests would probably be discarded because you must complete all of the test sessions for the data to be of much use to us.



TRAINING

Schedule for Training (Day 1) and Practice (Day 2)

Training begins with the Consent Form--DO NOT DO ANYTHING UNTIL THE CONSENT FORM IS SIGNED!!!!

The Consent Form signing is followed by a brief description of how the study will proceed, and one Participant is selected for the Fitness Test for the first morning (Training). After a few summary comments by Kelly, the Participants who will take the Fitness Test on the following day can leave. Then, the IH Technician places the Heart Rate monitor on the first Participant to take the Fitness Test for Kelly to begin the Fitness Test. The IH Technician then places all the monitoring equipment on the Participant, fitting the over-head strap to the Blood Pressure Cuff and so on to give the Participant a clear picture of the monitors and to get them to the stage that they will be a little helpful in putting it on during test days. Activate the Blood Pressure cuff manually to give the Participant an idea of how it feels--data are not collected. This same scenario is played out in the following AM session (Practice) for the Participants who do not take the Fitness Test on Day 1.

In the PM of Day 1 (Training), all Participants return for training on the Behavioral Tests.

In the AM of Day 2 (Practice), only the Participants scheduled for Fitness Tests on Day 2 will be required at the Test Trailer/Site.

In the PM of Day 2, all Participants are given the Behavioral Tests again (a shorter version as the Instructions are shortened). In addition, they take the Grip Strength test and a simulation of the Balance Test. Then, Kelly describes the schedule for the three Test Days.

15. Click on "Check Communication." A dialogue box "Received Acknowledgement!" should appear.
16. Click on "OK."
17. Select trial number: "tr01han."
18. Enter "calibration" followed by the date in the Trial Description field (e.g., "calibration8.05.96").
19. Click on "Start." A dialogue box "Please have the subject step off the platform. Initialization follows."
20. Clear the platform.
21. Click on "OK." The computer will beep twice and the dialogue box "Acquisition starts in 5 seconds" will appear.
22. Place weight 1 in the dead center of the platform.
23. Click on "OK."
24. After completing the trial (35 seconds), click on "Save." Repeat with the 3 other 25 pound weights added one at a time on sequential trials, then remove and Examiner stands on the platform for the 5th trial. If 5% off linear function/true weights, reposition the platform on a more level part of the floor and repeat steps 23, 24. REPEAT DAILY UNTIL RELIABILITY ESTABLISHED UNDER TEST CONDITIONS, THEN ONLY WHEN TRAILER OR PLATFORM IS MOVED.
25. Click on "Finish".
26. Under the menu heading Action, select "Analysis."
27. Find the calibration directory, selecting the "calib" file on the box on the left.
28. Click on the double arrows. The file name should appear on the left window.
29. Click the "Plot" button.
30. Select the Fz option. The Graph should be stable, measuring the weight in lbs.
31. Save the Calibration file to record baseline noise for the session.

Small Test Room/IH Tech Area [Setup]

1. On an index card, place the week's Participants' names and the Blood Pressure Cuff and Minimeter ID #. Tape the index cards to the tubs containing each Participant's monitors (beginning of week).
2. Place monitors in the Participant's tub (same ones all week).
3. Cut 6"-long strips of electrical tape for skin temp (2 per Participant)
4. Place the paper shoes below the Participant's tub (same ones all week).
5. Set up the oral thermometer and load it with probe covers (12 per day for 4 Participants).
6. Label urine cups with the Participant name and time period (AM/lunch/PM), and place the cups for each Participant below the card with their name (do so just before the session or 3 times a day).

Balance Platform

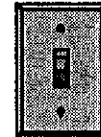
Preparation-Calibration

1. Verify that the Accusway platform is in its proper location (identified by tape) and that the fixation points are on the wall in the appropriate location.
2. Power up computer (gray switch on left side) -- you'll see c:\>
3. Type "win" to launch Windows (3.1).
4. Double click on Accusway, then double click on the Swaywin icon.
5. Under menu heading Action, choose Acquisition
6. Now you are in acquisition set-up.
7. Click "Directory Info and Setup" button in the bottom left corner. (The parameters are pre-set 4 trials, total duration 30 seconds, keystroke 5 seconds)
8. Enter "han" for the subject initials, using the tab key to advance to the next field.
9. Check test date.
10. Enter Examiner's initials in the "Test Conducted by:" field.
11. Click on "Create Directory."
12. Study Directory should be set to Heat. Change the Subject Directory New Name to "cal" followed by the date (e.g., "cal8.05").
13. Click on "create." This will take you back to the INFO window.
14. Click on "OK."

6. Synchronize Examiner watches, Blood Pressure and Minimeter monitors and computers with the STUDY CLOCK (see Setup).
7. Clean water glasses set out at each Participant station (PM).

Behavioral Test Stations (1-4)

1. Place Participants' names on index cards for test stations and place their ID #s on the back of the index card at (beginning of the week).
2. Place the session letter sequence on the back of the index card for the week, with the days/dates and the battery for each session. Use Hanford-A for training and, sequentially, battery B-H for subsequent sessions. (viz., Train-A; Mon-B; Tues AM-C; Tues PM-D; etc.), for each Participant (beginning of week).
3. Power up:
 - the DataSled [Slide Switch]
 - the Powerbook.
4. Double click on Macintosh HD [if needed].
5. Double click on the BARS Master.
6. Double click on the BARS icon.
7. From the File menu, select Open Project
8. Select "Heat Project"
9. When the hand appears, select battery (session #) from Battery menu (use the list on the back of the index card, then check it off).
10. Select Run from the Battery menu
11. Turn on the CAPS LOCK by pressing the key (green light on).
12. Input startup selections:
 - Subject ID (e.g., HAN001.1)
 - Examiner (Initials)
 - Computer (PowerBook/DataSled/IFU)Turn off CAPS LOCK by pressing the key (light off)
 - Handedness (right or left)
13. When the "Press any number" screen appears, place the DataSled over the Powerbook keyboard.
14. When the "Press any number" screen appears, place the DataSled over the PowerBook keyboard
15. **AM-PRE-Shift ?aire at each Station**
LUNCH--MID-Shift ?aire at each Station
AFTERNOON--POST-Shift ?aire at each Station



DAILY START-UP

Examiners

All clean self/clothes/lab coat for Kelly as appropriate for IH Tech.
Wear name badge, Hanford ID, and wrist watch.
Synchronize wristwatches with Study Clock.

Session Log

1. Record in Log on a tabular diagram of the station the ID #s at each Behavioral Test Station.
2. Enter date, Participant ID #s and Session (training, practice, Test Day 1 AM, etc.).
3. Record unusual occurrences, identifying source and individual affected. (Refer to Notetaking Guidelines.)

General

1. Park the Test Trailer adjacent to the Change Trailer in the Tank Farm area where testing will be conducted for the day.
2. Complete all Trailer stationing activities.
3. Post "Heat Stress Study" and "Do Not Disturb" signs on the trailer and "Please keep quiet..." inside test area.
4. Assign each expected Participant a unique ID Number and Behavioral Test Station. Assign the numbers sequentially from 001 with the prefix HAN # # #. If a Participant drops out, no matter how early, do not re-use the number. For each session, the suffix ".1" (indicating the session #) will be added sequentially. Thus, the first subject's training data will be called "HAN001.T", the next test session will be "HAN001.1", etc. If a problem appears, append the suffix with "b", "c" etc. to create separate data files (e.g., "HAN001.3b").
5. Place the ID number on the Data Forms for each Participant. Place their name and ID # on the top of the clipboard (maintain a separate clipboard for each Participant).

TRANSPORT

Coordinated with the Participant testing schedule, an IH Technician will arrange for transport of trailer and electric hookup, or identify a fixed test site with management.

Secure the following when the test trailer is to be relocated:

1. Powerbooks (4) [roughneck containers]
2. DataSleds (4) [roughneck containers]
3. IFUs (4) [roughneck containers]
4. IBM Thinkpad [roughneck containers]
5. Other items on tables [roughneck containers]
6. Chairs [place on sides]
7. Clear tables [fold and place on floor]
8. Cycle Pergometer [secure pendulum]
9. Drinking water tank [???
10. Scale
11. File cabinet [lock]
12. Dividers [place on floor]

Physiological Monitors [Setup]

Place the monitors in the green bins, matching labels for the Participant ID on the monitors and the bins (for the test week).

1. Mini-Logger with pouch (1 per Participant)
2. Tympanic Temperature probe/clean, extending 1/16" out of ear plug (1 per Participant)
3. Wrist activity monitor (1 per Participant)
4. Ankle activity monitor (1 per Participant)
5. Heart rate monitor with elastic strap (1 per Participant/check size)
6. Skin temperature patch (1 per Participant)
7. Data Logger belt (1 per Participant)
8. ABP cuff (verify correct size for Participant), with air hose (1 per Participant)
9. ABP monitor (1 per Participant/check ID)
10. Paper shoes (1 set per Participant)

Small Test Room/IH Tech Area [Setup]

1. Physiological Monitors in Bins (above)
2. Activity Data Forms on clipboard (1 per Participant)
3. 3 Chairs/for Examiner and Participants
4. Table for Paper shoes, Monitors, Urine containers
5. Participant ID index cards (see Daily startup)
6. Weight /height scale (Kelly may need this on Day 2/Practice PM)
7. Post: Pic of Kent w/ monitors, oral temp placement, Manual pages.
8. First Aid kit (with cold packs) (File Cabinet)
9. Urine processing dipsticks, UW centrifuge and materials (File Cabinet)
10. Backup Sensors / Ambulatory cuffs/timer /diskettes (File Cabinet)
11. Place the Study Clock on the File Cabinet (or other visible location)
12. Clipboards for Activity observation (2)
13. Stopwatches for Activity observation (2)
14. Data Forms for Activity observation (in File Cabinet)
15. Binoculars for Activity observation (for Kelly)
16. Examiner Manual / Instructions (for IH Technician)

Behavioral Test Stations (4) [Setup]

1. PowerBook with AC power cord connected to surge strip
2. Response Unit (DataSled) connected to the Interface Unit (IFU)
3. Connect IFU to Powerbook printer (serial) port and DataSled power transformer to surge strip; surge strip plugged into wall outlet
4. Water cups (**FILLED FOR FITNESS TEST and POST-SHIFT TESTING**).
5. On index card place the week's Participant name.
6. On the back of the index card, place: the station number, the Participant ID#, PowerBook ID, DataSled ID, IFU ID (Log). Day/batteries Train-H.
7. Above the Behavioral Test Stations, place a sign that says, "Please keep quiet until everyone has completed the tests."
8. Power up: • DataSled [Slide Switch]
• Powerbook
9. SYNCHRONIZE POWERBOOK CLOCKS with STUDY CLOCK
10. VERIFY that the Hanford Train-H batteries are intact. The tests are: SAT/Dual Task (**FIRST TASK!!**); Digit Span; Tapping; SD; SDL; SRT

Balance Test Station [Setup]

1. Place Accusway platform on flat base (vibration is main problem).
2. Mark platform location with tape for repositioning if it is moved.
3. Attach cable to Thinkpad serial port & Accusway Platform w/ screws.
4. Place fixation point on wall (see test room layout).
5. Connect IBM Thinkpad with power cord to surge strip.
6. Connect Accusway Platform with power cord to surge strip and connect thick black cord to ThinkPad port.; plug surge strip into outlet.
7. Clipboards (4)/Foam/Step stool (Training only: for height); weight scale (may leave in IH area); Dynamometer; calibration weights; level.
8. Run calibration /graph. Place 1, 2, 3, 4 weights on four sequential trials (see *computer instructions*). IF 5% OFF LINEAR FUNCTION, REPOSITION AND REPEAT. REPEAT DAILY UNTIL RELIABILITY ESTABLISHED.
9. Picture of Kent wearing monitors
10. Examiner Manual/Instructions

Powerbook System Folder

| |
|--|
| Apple Menu Items folder: |
| TRASH the following |
| • Apple CD Audio Player |
| • Jigsaw Puzzle |
| • Shut Down |
| <i>f</i> Control Panels: |
| • Control Strip: Define: command+control+c (hide strip) |
| • Check accuracy of date and time. 12 hour (US) format. Daylight savings off (Winter). Time zone- Portland, USA. |
| • Desktop Pattern- dark but not gray. 3-D texture preferred. (e.g., green grass #29.) |
| • General Controls: Select protection lock for system folder and applications folder . |
| • Memory: Virtual memory OFF. |
| • Monitors: Select Thousands of colors. |
| • PowerBook: Set-up to custom. Power conservation to manual. Move all slide controls to the extreme right!! |
| • Sound: Alert Sound- Simple Beep. |
| • Volume at 3/4 |
| • Trackpad: Tracking at fast (or thereabouts). |
| • Views: Choose "Calculate Folder sizes" & "Show disk info. in header." |
| Startup Items Folder: This folder should always be empty |
| • Trash "Floppy Disk Maker" alias. |
| <i>f</i> Launcher Items |
| TRASH the following |
| • Communications, Entertainment, Product Demos |
| Put into <i>f</i> Apple Extras: |
| • PowerBook 5300 Read Me |
| • PowerBook 5300 Tour |
| <i>Other</i> |
| All aliases gone from everywhere |
| Appletalk Inactive |
| Put Supercard 2.5 into <i>f</i> Applications |
| Make SC Pouch Alias in Apple Menu |
| Load "BARS Master" on the Desktop |
| Put Shared file from BARS into Supercard 2.5: SC Pouch |
| Empty Trash |

Body Composition/Fitness Assessment [Setup]

1. Lange Skin Fold Caliper
2. Cycle Pergometer
3. Stopwatch/timer
4. Polar Heart Rate Monitor (with chest band and watchband)
5. Metronome

Powerbooks (4) [Setup/Configuration]

Install/maintain the following system software:

| Location/File Name | Comment |
|--------------------------|--|
| <i>f</i> Apple Extras | |
| Quick Draw GX | Graphic App for Printing |
| Quick Time Extras | May need for HSS |
| Quick Tips | OnLine help for 5300c |
| Text-to-Speech | May need for BARS (sm) |
| Universal Access | May be helpful for someone (sm) |
| WorldScript | May be helpful in other countries (sm) |
| <i>f</i> Applications | |
| Adobe Acrobat 2.0.1 | Doc's in orig. form, either platform |
| HyperCard Player 2.3 | May still need for BARS |
| MacLink Plus 8.0 | Converts Mac files to DOS and back! |
| PowerBook File Assistant | Needed for data file shuffling (sm) |
| Remote Access Client | |
| <i>f</i> Utilities | |
| Apple Printer Utility | |
| Disk First Aid | Essential |
| Drive Set-Up | Essential |
| Battery Recondition | |

Ambulatory BP Monitors [Setup/configuration]

1. Plug the gray data cord into the AMB monitor and the serial port of the ThinkPad.
2. Plug the data key (the grey 25 pin transformer) into the printer port.
3. Power up the ThinkPad by sliding the gray button on the left side.
4. At the c:\> prompt, type "abppci".
5. At the Introduction screen, click "OK".
6. From the ABP Main Menu, choose "ABP Communications".
7. Turn on the monitor (black switch on bottom of unit).
8. From the Communications menu choose "Initialize the ABP Monitor".
9. Initialize the ABP Unit using the following settings:
Display active monitor Y
No. of Cycle Periods 1 -
Period 1 Start 7 End 17 Cycle Time 30 Tone Y?
Date: Time: (Time & Date from ThinkPad)
Patient Name: Session ID (e.g., Practice, Test Day 3)
Patient ID #: Subject ID (e.g., HAN001)
Comments: (None)
10. Press "end" when finished.
11. Record the Subject ID and Session ID on a card and tuck it in the monitor pouch.
12. Verify that the clock time on the ThinkPad is synchronized with the monitor and the STUDY CLOCK.
13. Unplug the gray data cord from the monitor.
14. Attach the black air hose and cuff to the top of the unit. The monitor is ready to record data.
15. Repeat steps 6-14 for the other monitors.

IBM ThinkPad [Setup/configuration]

Maintain the following software on the IBM notebook, synchronize clock:

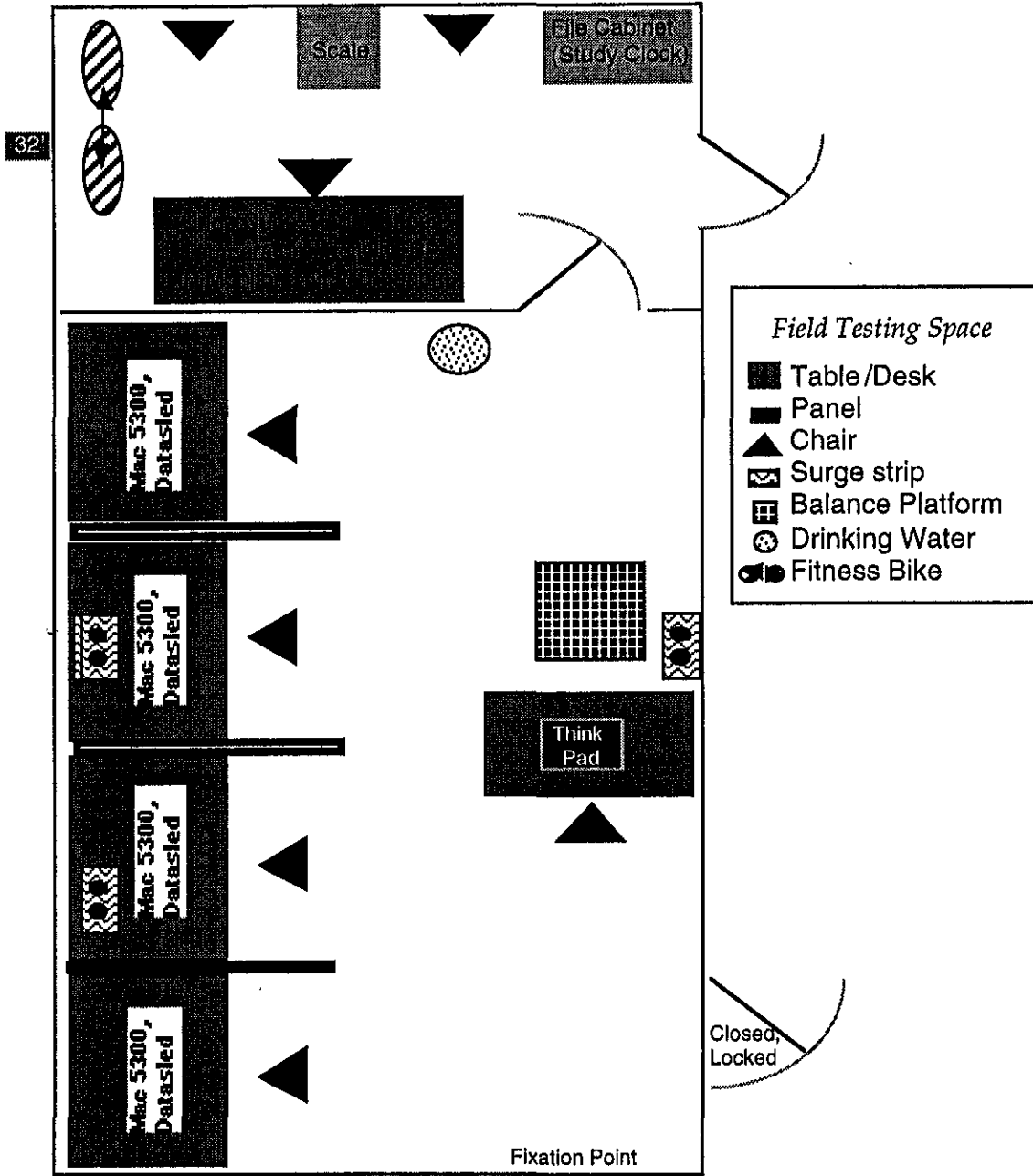
1. AMTI, Sanka's new beta version
2. Amit's analysis software
3. Mini Mitter's ML2000 software
4. Space Labs' APB software
5. SYNCHRONIZE THINKPAD CLOCK WITH STUDY CLOCK.

Mini-Loggers 2000 [Setup/Configuration]

1. Plug the black data cord into the Mini-Logger and the ThinkPad serial port.
2. Power up the ThinkPad by sliding the gray button on the left side.
3. At the c:\> prompt, type "cd ML2000".
4. At the c:\ML2000> prompt, type "ML2000" to launch the program.
5. At the Introduction screen, click "OK".
6. Under the "Setup" menu, select "View Current Setup" and confirm the following settings:

| | |
|-------------------|------------------------|
| COM Port | COM Port 1 |
| Time Mark | "marktime" |
| Delimiter | ' |
| File length | 1,000,000 |
| Temperature Scale | Fahrenheit |
| X Axis Labeling | Label by Time and Date |
7. Under the "Setup" menu, select "Save Setup Changes".
8. At the confirmation box, click "OK".
9. Under the "Logger" menu, select "Test Logger Link". If not successful, press the * button until the logger tweets, then try testing the link again.
10. Each logger is configured to collect data from the following Jacks:
1) Ear-temp; 2) wrist-activity; 3) ankle-activity; 4) Arm-temp
11. Record the Subject ID and Session ID on an index card and tuck it in the monitor pouch.
12. Under the "Logger" menu, select "Set Start/Stop Time". Accept the start time (immediately) and change the stop time to continuous data collection.
13. Synchronize the PC date and clock time with the STUDY CLOCK by using the ML2000 Utility.
14. When configuration is complete, select "View Times, Status" from the "Logger Menu" to confirm settings.

Site (Trailer) Set-Up



- [• * "ONLY IF indicated by Kelly, ADD: "You will also need to be tested for 35 minutes in the morning and afternoon (after 3 PM) on a weekend day. You will be paid (cash) at time and a half calculated at your current pay rate (about 1-1.5 hours), but you cannot be very active or get overheated during the day. However, you will have to travel to _____ for the testing." ONLY IF indicated by Kelly]
- "All results will be kept confidential. Individual results will not be given to Hanford management--they will never see your data."
- "All the things you need to do will be described on the first morning during 45 minutes before you start work on _____ day."
- "If you need glasses for reading bring them for training and all week."
- "Do not eat a large meal or exercise vigorously within 3 hours of the first two mornings" (training and practice).
- "Any questions?? Are you willing to volunteer for this study? Of course, you are volunteering, so you can quit at any time--even during the week, though we hope you don't quit once you start."
- If they volunteer, "Could you tell me your approximate height and weight so we can select the right test equipment for you."
- "OK--see you on _____. _____ will meet you at the pre-job meeting to drive you to the test site. Then we will get you to your job site. I will also be in touch with your supervisor/PIC to let them know about the study. Management is supporting the study, so there shouldn't be any problems."

Supervisors

After Participants are assigned and volunteers agree (after hearing the description of the study), the IH Technician needs to contact the supervisors, PICs or whoever will oversee the work on site and give them the written synopsis of the study (see "Information for Supervisors"):

- This is a study of the effects of heat stress in which the workers will be extensively tested and wear monitoring equipment for 3 days.
 - Study Participants could arrive at the Change Trailer a little late in the AM because testing takes about 35 minutes. However, this would be minimal if Participants can be excused early from the pre-job meetings.
 - A blood pressure cuff pumps up twice each hour and the Participant must stop work for 30 seconds while their blood pressure is measured.
- [• If Kelly asked you to arrange testing on the weekend, add: We will test these volunteers on the weekend, but our study will pay them in cash for that time --the weekend pay is not a Hanford responsibility.]



SCHEDULING [IH TECHNICIANS]

IH Technicians will attend the weekly planning meetings or other appropriate meetings in West and East Tank Farms, and with Kaiser and CPO in order to identify volunteers for potential assignments. This is a coordination role with supervision/management at the site. (Kelly takes over activity and temperature monitoring when the IH technician is working on scheduling.)

Scheduling is to be confirmed by the IH technicians during the morning pre-job meetings or plan of the day meetings at the site for the study that week and accompany/transport Participants to the Test location.

Following training, it would be desirable to schedule one inside (cool) work day and two outside (hot) days if this is consonant with the Participant's jobs. Alternatively, Kelly may, in coordination with study investigators, request a weekend testing day (a half an hour in the AM and the PM to be conducted in Richland) which would be paid for (in cash) by the study (at time and a half).

Volunteer Participants

Contact each volunteer, tell them they are scheduled to participate in the study the following week if they do want to volunteer for the study:

- "Volunteers will be tested for half an hour each day in the morning and a half hour in the afternoon, each day of the week. There will be two days of training and practice (35-45 minutes in the morning and again in the afternoon) followed by 3 work days (also 35-45 minutes in the morning and in the afternoon). You will fill out questionnaires on your medical history and take a bicycle fitness test (lasting about 5-10 minutes) during training."
- "You will take tests of memory, attention, balance, and grip strength during the mornings (after the pre-job meeting) and after again work (as soon as you leave the Change Trailer). You will have to wear monitors for temperature, activity, heart rate, and blood pressure during the work days. You will be weighed, your temperature will be taken (orally-under the tongue), you will complete a symptom questionnaire and give a urine sample three times a day. The urine sample is to determine the distribution of body fluids--it will not be used to screen for drug use." *

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HANFORD HEAT STRESS STUDY

NIOSH-funded study conducted by:
United Brotherhood of Carpenters, Michigan State
University, Oregon Health Sciences University

Key Contacts

Hanford Security - 911
Patrol [200 East] - 373-3800

Benton County Sheriff [300 area] - 376-1022

Heat Stress Site Office [200 West/D-118] - (509) 372-0185 FAX: 3522

Kelly Davis - Behavioral, balance and fitness Examiner
Cell phone (*18- 503) 504-0719 Richland residence (509) 375-4285

Hanford Tank Farms -

East: John McKinney 373-1904 (beeper: 85-2545) Home: 783-0338
West: Del Spaulding 373-3050

Access, administration, people, test trailer, temperature monitors
Buck Cameron (206) 935-7748 or DC @ UBC (202) 546-6206
FAX = (206) 935-7808 Home = (206) 935-4425)

Operations/Supervisor Problems/Hanford Resources

Steve Youngerman (West Tank Farms)
Dee Bristol / Linda Calderon (509) 372-3242

Behavioral or Balance equipment, testing logistics:
Kent Anger at (503) 494-2514 home = (503) 635-2199

Medical Questions

Ken Rosenman (517) 353-1846 FAX: 432-3606 Beeper: (517) 228-9079

Urine samples (for UW)

Tim Takaro, MD (206) 616-7458 (UW lab?)

Trailer problems - Pat Rivers (509) 585-0492

Computer Service -

Apple:

IBM:

AMTI (programmer) - Kareem Sanka (800) 422-2684 ext. 16

BARS - Diane Rohlman (503) 494-2513

OMI (Amb BP) - Wm. J. Neiger (206) 337-1410