**Form Approved**

**OMB No. 0920-XXXX**

**Exp. Date xx/xx/xxxx**

**Attachment G: Data Sheet**

***Privacy Act Statement:***

This data collection is authorized by the Occupational Safety and Health Act of 1970. Disclosure of this information is voluntary and you may withdraw your consent and your participation in this study at any time without penalty or loss of benefits to which you are otherwise entitled. There are no effects on the individual for not providing any or all parts of the requested information. NIOSH will use this information to redesign LEO cruiser cabs and personal protective gear (such as body armors). More specifically, the data will be used in defining the adjustment range of seats and restraint systems and other safety features of the cab as well as in specifying improved sizing systems for protective gear. This information will be used by and disclosed to NIOSH personnel and contractors or other agents who need the information to assist in activities related to the redesign of LEO cruiser cabs and personal protective gear. The results of the study in a summary format will be disseminated to police vehicle manufacturers, manufacturers of law enforcement officer (LEO) safety equipment, and state police organizations. Additional dissemination of results will be reported in peer-reviewed journals and other transportation safety forums. All data shared will be de-identified prior to dissemination. This activity is covered under the Privacy Act System of Records Notice (SORN) Records of Subjects in Certification, Testing, Studies of Personal Protective Devices, and Accident Investigations, Privacy Act System Notice 09-20-0159, which can be found here: <https://www.cdc.gov/SORNnotice/09-20-0159.htm>.

***Burden Statement:***

Public reporting burden of this collection of information is estimated to average 25 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. An agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a currently valid OMB control number. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to CDC/ATSDR Information Collection Review Office, 1600 Clifton Road NE, MS D-74, Atlanta, Georgia 30333; ATTN: PRA (0920-XXXX).

***NIOSH Anthropometric Information on Law Enforcement Officers***

# Participant No. Data and Time

**Measured by**

---

NO GEAR

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | STANDING | | Measurement |
| 1. |  | Acromial Height |  |  |
| 2. |  | Acromion-Radiale Length |  |  |
| 3. |  | Axilla Height |  |  |
| 4. |  | Cervical Height |  |  |
| 5. |  | Chest Breadth |  |  |
| 6. |  | Chest Circumference |  |  |
| 7. |  | Chest Depth |  |  |
| 8. |  | Chest Height |  |  |
| 9. |  | Crotch Height |  |  |
| 10. |  | Foot Breadth |  |  |
| 11. |  | Foot Length |  |  |
| 12. |  | Hip Circumference |  |  |
| 13. |  | Radiale-Stylion Length |  |  |
| 14. |  | Stature |  |  |
| 15. |  | Thigh Circumference |  |  |
| 16. |  | Thumb-Tip Reach |  |  |
| 17. |  | Waist Circumference |  |  |
| 18. |  | Weight (kg) |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | SITTING |  | Measurement |
| 19. |  | Acromion Breadth |  |  |
| 20. |  | Abdominal Extension Depth |  |  |
| 21. |  | Acromial Height |  |  |
| 22. |  | Bideltoid Breadth |  |  |
| 23. |  | Buttock-Knee Length |  |  |
| 24. |  | Buttock-Popliteal Length |  |  |
| 25. |  | Elbow Rest Height |  |  |
| 26. |  | Eye Height |  |  |
| 27. |  | Functional leg length |  |  |
| 28. |  | Forearm-Forearm Breadth |  |  |
| 29. |  | Front Waist Length |  |  |
| 30. |  | Grip strength (kg) |  |  |
| 31. |  | Hand Breadth (Palm on Table) |  |  |
| 32. |  | Hand Length (Palm on Table) |  |  |
| 33. |  | Head Arc Length |  |  |
| 34. |  | Head Breadth |  |  |
| 35. |  | Head Length |  |  |
| 36. |  | Head Circumference |  |  |
| 37. |  | Hip Breadth |  |  |
| 38. |  | Neck Circumference |  |  |
| 39. |  | Knee Height |  |  |
| 40. |  | Nuchal height |  |  |
| 41. |  | Popliteal Height |  |  |
| 42. |  | Sitting Height |  |  |
| 43. |  | Thigh Clearance |  |  |
| 44. |  | Waist Breadth |  |  |
| 45. |  | Waist Breadth Height |  |  |

IN GEAR

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | STANDING | | Measurement |
| 1. |  | Boot Breadth | |  |
| 2. |  | Boot Length |  |  |
| 3. |  | Chest depth |  |  |
| 4. |  | Chest width |  |  |
| 5. |  | Stature with Boots/Shoes |  |  |
| 6. |  | Weight in gear (kg) |  |  |
|  |  | SITTING |  | Measurement |
| 7. |  | Abdominal Extension Depth |  |  |
| 8. |  | Acromion-troch surface length |  |  |
| 9. |  | Bideltoid Breadth |  |  |
| 10. |  | Bi-trochanter surface length |  |  |
| 11. |  | Buttock-shoe tip length |  |  |
| 12. |  | Grip strength with glove (kg) |  |  |
| 13. |  | Hip breadth |  |  |
| 14. |  | Shoulder-grip length |  |  |
| 15. |  | Thigh Clearance |  |  |
| 16. |  | Waist Breadth |  |  |

# Appendix A to Attachment G Landmarks and Definitions

1. Abdominal point, anterior: The most protruding point of the relaxed abdomen of a seated participant.
2. Acromion, left and right: The point of the intersection of the lateral border of the acromial process a line running down the middle of the shoulder from the neck to the tip of the shoulder.
3. Acropodion, left and right: The tip of the first or second toe of the right foot, whichever is longer.
4. Cervicale: Superior palpable point of the spine of the 7th cervical vertebra.
5. Cheilion: Lateral point of the juncture of the fleshy tissue of the lips with the facial skin at the corner of the mouth.
6. Chest point: Point at the maximum protrusion of the chest, on both males and females.
7. Chin: Most protruding point on the bottom edge of the chin along jawline.
8. Dactylion III, right: The tip of the middle finger.
9. Deltoid point, left and right: The lateral point of the right deltoid muscle, and the margin of the left deltoid muscle at the level of the right deltoid point.
10. Dorsal juncture of the calf and thigh: The juncture between the right calf and thigh behind the knee of a participant sitting with the knee flexed 90 degrees.
11. Ectocanthus: Outside corner of the right eye formed by the meeting of the upper and lower eyelids.
12. First metatarsophalangeal protrusion: The medial protrusion of the right foot in the region of the first metatarsophalangeal joint.
13. Fifth metatarsophalangeal protrusion: The lateral protrusion of the right foot in the region of the fifth metatarsophalangeal joint.
14. Glabella: The anterior point on the frontal bone midway between the bony brow ridges.
15. Gonion: Most lateral, most inferior, and most posterior point on the angle of the mandible.
16. Iliocristale: The highest palpable point of the right iliac crest of the pelvis, one half the distance between the anterior superior iliac and posterior superior iliac spine.
17. Infraorbitale: Lowest point on the anterior border of the bony eye socket.
18. Knee point, anterior, left and right: The most protruding point of the kneecap of a seated participant.
19. Menton: Inferior point of the mandible in the midsagittal plane.
20. Metacarpale II: The lateral point of the right metacarpophalangeal joint II (at the base of the index finger on the outer edge of the hand).
21. Metacarpale V: The medial point of the right metacarpophalangeal joint V (at the base of the little finger on the outer edge of the hand).
22. Nasal Root Point: Point at the right side of the nasal root at a depth equal to one-half distance from the bridge of the nose to eye.
23. Opisthocranion: The posterior point of the head, in the mid-sagitttal plane, when the head is held in the Frankfurt Plane.
24. Posterior Superior Iliac Spine: Posterior point of the crest of the right ilium.
25. Pronasale: Point of the anterior projection on the tip of nose.
26. Pternion: The posterior point of the right heel.
27. Radiale: The proximal palpable point of the radius.
28. Sellion: Point of the deepest depression of the nasal bones at the top of the nose.
29. Stylion: The distal point of the styloid process at the distal end of the radius.
30. Suprasternale: The deepest indentation of the notch at the superior end of the sternum.
31. Tenth Rib: The inferior point on the 10th rib.
32. Thigh Point, top: The highest point of the top of the right thigh of a seated participant.
33. Tragion, left and right: The superior point on the junction of the juncture of the cartilaginous flap (tragus) of the ear with the head.
34. Trochanter: A point at the center of the lateral surface of the greater trochanter of the right femur of a sitting participant.
35. Trochanterion: The superior point of the greater trochanter of the right femur of a standing participant.
36. Thumptip, left and right: The tip of the left and right thumb.
37. Vertex (top of the head): The highest point on the head when the head is in the Frankfort plane.
38. Waist (omphalion): Level of the center of the navel.
39. Zygion: Most lateral point on the zygomatic arch.
40. Zygofrontale, right and left: Lateral point of the frontal bone on its zygomatic process.

# Appendix B to Attachment G Description of Measurements and Instrument Used

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No.** | **Dimensions (No Gear)** | **Posture** | **Definition** | **Instrument Used** |
| 01 | Acromial Height | Standing | Vertical distance between the standing surface and the acromion landmark on the tip of the right shoulder measured in a standing posture | Anthropometer |
| 02 | Acromion- Radiale Length | Standing | Point-to-point distance between the acromion and radiale landmarks | Beam Caliper |
| 03 | Axilla Height | Standing | The vertical distance between a standing surface and the anterior point of the axilla is measured with heels together and shoulders and upper extremities are relaxed. | Anthropometer |
| 04 | Cervical Height | Standing | The vertical distance between a standing surface and the cervicale landmark on the back of the head | Anthropometer |
| 05 | Chest Breadth | Standing | Horizontal breadth of the chest at the level of the maximum anterior protrusion | Beam Caliper |
| 06 | Chest Circumference | Standing | Horizontal circumference of the chest at the level of the maximum anterior protrusion | Tape Measure |
| 07 | Chest Depth | Standing | Horizontal depth of the chest at the level of the maximum anterior protrusion | Beam Caliper |
| 08 | Chest Height | Standing | Height of the level of the maximum anterior protrusion of the chest | Anthropometer |
| 09 | Crotch Height | Standing | Vertical distance from the standing surface to the crotch. Participant stands erect with feet slightly apart | Anthropometer |
| 10 | Foot Breadth | Standing | Distance between the 5th  metatarsophalangeal-protrusion landmark and first metatarsophalangeal protrusion | Beam Caliper |
| 11 | Foot Length | Standing | Distance between the most posterior protrusion of the heel and the most anterior tip of the toes on the right foot | Beam Caliper |
| 12 | Hip Circumference | Standing | Maximal horizontal circumference over the buttocks. The participant stands erect with heels together | Beam Caliper |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 13 | Radiale- Stylion Length | Standing | Point-to-point distance between the radiale and stylion (Elbow to Wrist) landmarks | Beam Caliper |
| 14 | Stature | Standing | Vertical distance between the standing surface and the top of the head | Anthropometer |
| 15 | Thigh Circumference | Standing | Circumference of the right thigh at its juncture with the buttock. The participant stands erect with legs spread apart just enough so that the thighs do not touch. | Tape Measure |
| 16 | Thumb-Tip Reach | Standing | Distance between the surface of the back and the tip of the right thumb (The participant raises both arms horizontally forward with the elbows straight and the thumbs on top. The fingers are curled out of the way.) | Anthropometer |
| 17 | Waist Circumference | Standing | Horizontal circumference at the level of navel (omphalion) | Tape Measure |
| 18 | Weight (kg) | Standing | Weight, in kilograms | Electronic Scale |
| 19 | Acromion Breadth | Sitting | The participant sits erect on a flat surface. The upper arms are hanging relaxed at the sides with the forearms and hands on the thighs. The breath measurement is from the right acromion to the left acromion. | Beam Caliper |
| 20 | Abdominal Extension Depth | Sitting | Horizontal distance between the most anterior point of the abdomen (abdominal point, anterior, sitting) and the back at the same level measured in a seated posture | Beam Caliper |
| 21 | Acromial Height | Sitting | Vertical distance between the sitting surface and the acromion landmark on the tip of the right shoulder measured in a seated posture | Anthropometer |
| 22 | Bideltoid Breadth | Sitting | Maximum horizontal distance between the lateral margins of the upper arms on the deltoid muscles measured in a seated posture | Beam Caliper |
| 23 | Buttock-Knee Length | Sitting | Horizontal distance between the buttock plate and the anterior point of the right knee (knee point, anterior) | Anthropometer |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 24 | Buttock- Popliteal Length | Sitting | Horizontal distance between the buttock plate and the back of the right knee (the popliteal fossa at the dorsal juncture of the calf and thigh) | Anthropometer |
| 25 | Elbow Rest Height | Sitting | Vertical distance between the sitting surface and the bottom of the right elbow (olecranon, bottom) | Anthropometer |
| 26 | Eye Height | Sitting | Vertical distance between the sitting surface and the outer corner of the right eye (ectocanthus) | Anthropometer |
| 27 | Functional leg length | Sitting | The straight-line distance between the plane of the bottom of the right foot with the leg extended and the back of the body of a seated participant is measured with an anthropometer passing over the trochanter landmark on the side of the hip. | Anthropometer |
| 28 | Forearm- Forearm Breadth | Sitting | Horizontal breadth across the body from the lateral surface of one forearm to the lateral surface of the other, with the upper arms hanging relaxed and the elbows flexed 90 degrees | Beam Caliper |
| 29 | Front Waist Length | Sitting | Surface distance from suprasternale to omphalion while the participant sits erect | Tape Measure |
| 30 | Grip strength (kg) | Sitting | The participant squeezes the dynamometer (a force measuring instrument) with their predominant hand using his/her maximum force | Dynamometer |
| 31 | Hand Breadth (Palm on Table) | Sitting | Breadth of the hand between the landmarks at metacarpal II and metacarpal V | Sliding Caliper |
| 32 | Hand Length (Palm on Table) | Sitting | Length of the right hand between the stylion landmark on the wrist and the tip of the middle finger (dactylion III) | Sliding Caliper |
| 33 | Head Arc Length | Sitting | Surface length along contours of head from glabella to nuchal measured with a tape measure | Tape Measure |
| 34 | Head Breadth | Sitting | Maximum horizontal breadth of the head above the attachment of the ears | Spreading Caliper |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 35 | Head Length | Sitting | Distance from the glabella landmark between the brow-ridges to the posterior point on the back of the head | Spreading Caliper |
| 36 | Head Circumference | Sitting | Maximum circumference of the head above the attachment of the ears to the head, just above the ridges of the eyebrows, and around the back of the head | Tape Measure |
| 37 | Hip Breadth | Sitting | Maximum distance between the lateral points of the hips | Beam Caliper |
| 38 | Neck Circumference | Sitting | Horizontal circumference of the neck above the laryngeal prominence measured with a tape measure | Tape Measure |
| 39 | Knee Height | Sitting | Vertical distance between the footrest surface and the top of the right knee at the center of the widest part of the calf | Anthropometer |
| 40 | Nuchal height | Sitting | The participant sits erect looking straight ahead. The vertical distance is measured between the seated plane and the most protrusive point of the nuchal | Anthropometer |
| 41 | Popliteal Height | Sitting | Vertical distance from a footrest surface to the back of the right knee (the popliteal fossa at the dorsal juncture of the right calf and thigh | Anthropometer |
| 42 | Sitting Height | Sitting | Vertical distance between the sitting surface and the top of the head | Anthropometer |
| 43 | Thigh Clearance | Sitting | Vertical distance between the sitting surface and the highest point on the top of the right thigh (thigh point, top) | Anthropometer |
| 44 | Waist Breadth | Sitting | Maximum horizontal breadth of the waist between the 10th rib and the iliocristale landmark, with the participant sitting erect | Beam Caliper |
| 45 | Waist Breadth Height | Siting | Height of the maximum horizontal breadth of the waist between the 10th rib and the iliocristale landmark | Anthropometer |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No.** | **Dimensions (With Gear)** | **Posture** | **Definition** | **Instrument Used** |
| 01 | Boot Breadth | Standing | The participant stands with the weight distributed equally on both feet in officer gear. The maximum horizontal distance across the right boot perpendicular to its long axis is measured between the inside and outside of the boot | Beam Caliper |
| 02 | Boot Length | Standing | The participant stands with the weight distributed equally on both feet in officer gear. The distance between the back-most point of the right heel of the boot and the most anterior part of the boot is measured parallel to the long axis of the foot | Beam Caliper |
| 03 | Chest depth | Standing | The participant stands erect looking straight ahead in officer gear. The horizontal depth of the chest is measured from the front to back at the level of the most protrusive point of the right bra pocket on women or of the right nipple on men | Beam Caliper |
| 04 | Chest width | Standing | The participant stands erect looking straight ahead in the officer gear.  The arms hang relaxed at the sides. The horizontal breadth of the chest is measured at the level of the nipples on men or the most protrusive point of a bra on women | Beam Caliper |
| 05 | Stature with Boots/Shoes | Standing | Vertical distance between the standing surface and the top of the head, with the participant wearing his/her own footwear | Anthropometer |
| 06 | Weight in gear (kg) | Standing | The participant wears officer gear including tools in pockets and stands on a scale with the feet parallel and the weight distributed equally on both feet | Electronic Scale |
| 07 | Abdominal Extension Depth | Sitting | Horizontal distance between the most anterior point of the abdomen (abdominal point, anterior, sitting) | Beam Caliper |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  | and the back at the same level measured in a seated posture |  |
| 08 | Acromion- troch surface length | Sitting | The participant sits on a flat  surface in officer gear. The thighs are parallel, and the feet are in line with the thighs on a surface adjusted so that the knees are  bent 90 degrees. The contour  distance from the right acromion to the left trochanter is measured across the gear. | Tape Measure |
| 09 | Bideltoid Breadth | Sitting | Maximum horizontal distance between the lateral margins of the upper arms on the deltoid muscles measured in a seated posture | Beam Caliper |
| 10 | Bi-trochanter surface length | Sitting | The participant sits erect on a flat surface in officer gear. The  maximum distance on the officer gear from the right trochanter to the left trochanter is measured going above the legs | Tape Measure |
| 11 | Buttock-shoe tip length | Sitting | The participant sits erect on a flat surface in officer gear. The horizontal straight-line distance is measured between the back right buttock and the most  anterior part of the boot | Beam Caliper |
| 12 | Grip strength with glove (kg) | Sitting | The participant squeezes the dynamometer with their predominant hand using his/her maximum force while wearing an extrication glove. | Dynamometer |
| 13 | Hip breadth | Sitting | The participant sits erect on a flat surface in officer gear. The  maximum horizontal breadth of the officer gear across the hips is measured. | Beam Caliper |
| 14 | Shoulder-grip length | Sitting | The participant sits erect in officer gear. The buttocks and the shoulder blades touch a back rest.  The right arm is extended  forward horizontally. The dowel rod is held vertically. The  horizontal distance is measured | Beam Caliper |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  | between the (back) wall and the top, middle point of the dowel  rod |  |
| 15 | Thigh Clearance | Sitting | Vertical distance between the sitting surface and the highest point on the top of the right thigh (thigh point, top) | Anthropometer |
| 16 | Waist Breadth | Sitting | Maximum horizontal breadth of the waist between the 10th rib and the iliocristale landmark, with the participant sitting erect | Beam Caliper |