

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-Stylian 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. Opisthocranium: The posterior point of the head, in the mid-sagittal 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. Styilion: 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. Thumtip, 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 5 th 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-Stylian Length	Standing	Point-to-point distance between the radiale and stylian (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 breadth 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 stylium 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 10 th 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 10 th 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 10 th rib and the iliocristale landmark, with the participant sitting erect	Beam Caliper