THE GARRETT CORPORATION
AiResearch Manufacturing Divisions
LOS ANGELES 45 CALIFORNIA

REPORT NO. SS-1018-R

(FINAL REPORT)
PRESSURE SUIT TEST PROGRAM
NAA/S&ID, PROJECT APOLLO

SS-1018-R 26 September 1962

NO. OF PAGES 187

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REVISIONS				ADDITIONS			
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FINAL REPORT
PRESSURE SUIT TEST PROGRAM
NAA/S&ID, PROJECT APOLLO

1.0 INTRODUCTION

This report presents the results of the pressure suit test program conducted to determine the cooling and ventilation required for a crew member during the Apollo mission. In addition to determining the quantity and temperatures of the vent gas necessary for comfort in a pressure suit, the requirements of the suit-man component upon the environmental control system was needed.

The AiResearch altitude chamber facility was used for the testing which was performed on three different types of pressure suits (Mercury, Navy MK-IV, and International Latex). The vent gas compositions were selected to simulate anticipated Apollo mission conditions, i.e., pure oxygen at 3.5 psia and an oxygen nitrogen mixture at 7.0 psia. The vent gas flow was varied for parameter optimization. The specific items that were to be determined were the total heat transferred to the suit air flow, the suit pressure loss and the suit discharge air temperature with a test subject performing varying tasks.

2.0 SUMMARY OF RESULTS

The results of the test program are shown in Figures 1 through 19. The significant results are as follows:

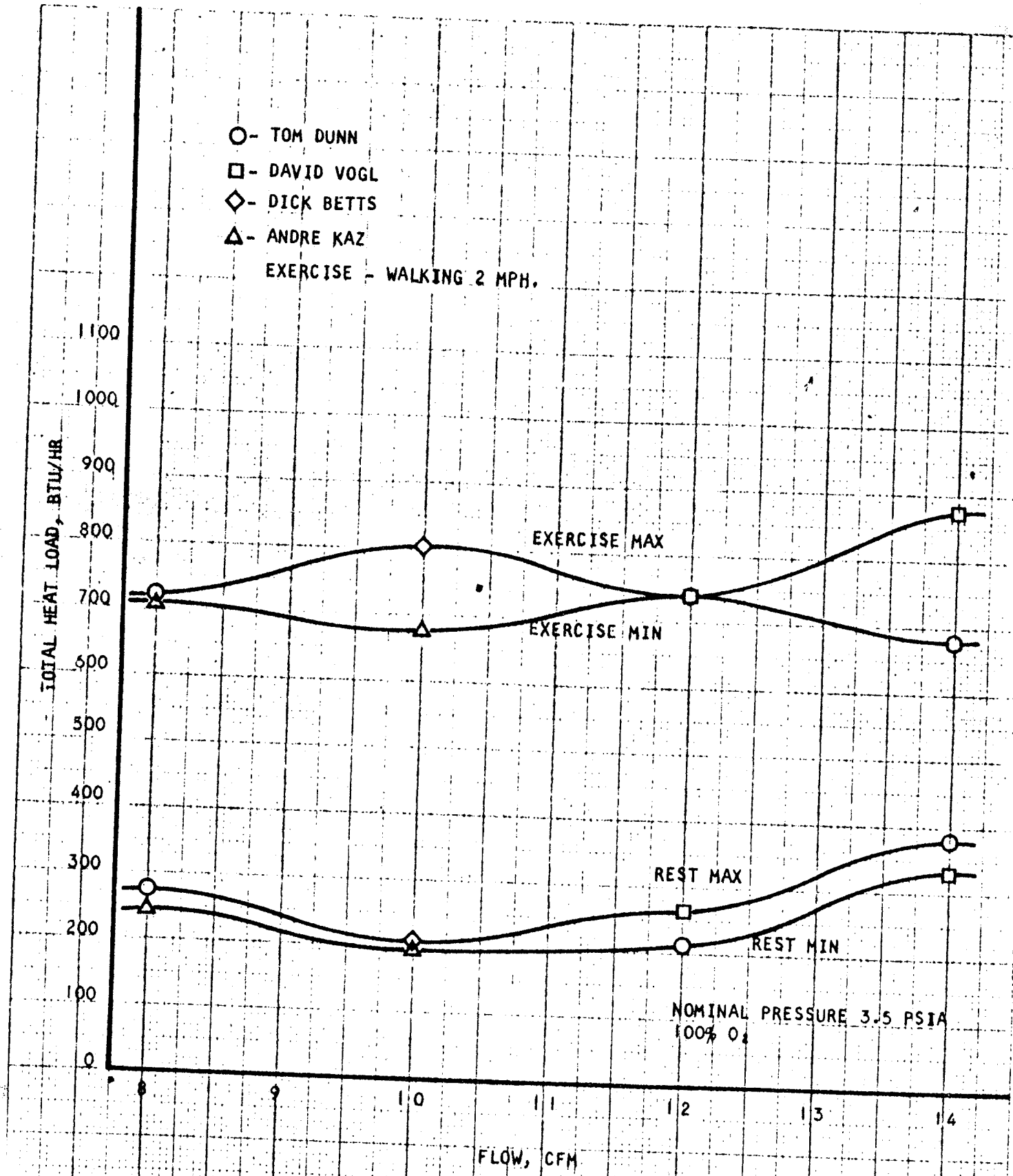
1. The suit occupants can be kept comfortable at low physical activity with the suit inlet gas saturated at 50°F by adjusting the flow below 10 cfm.

2. The exit dry bulb temperature of the vent gas is nearly constant (83-88°F) for all flow rates and suit occupant work rates.

3. The amount of sensible heat removed from the suit by vent gas is essentially a function of flow rate alone if the inlet temperature remains constant.

It should be mentioned that the Navy Mark VI suit proved to be so dissimilar to the type of pressure suit required for the Apollo program that testing of subjects in this suit were discontinued early in the program. This suit had too high a pressure drop at the Apollo design air flows and was not sufficiently insulated to obtain reasonable heat balances.

Of the three suits tested, the International Latex suit proved to be the most satisfactory. It had low pressure drop and was quite well insulated. The conclusions drawn from the test program were based primarily on the International Latex suit testing. All future tests should be conducted with this suit.



CALCULATED BY		TOTAL HEAT TRANSPORTED BY VENT GAS FOR INTERNATIONAL LATEX SUIT	Figure 1
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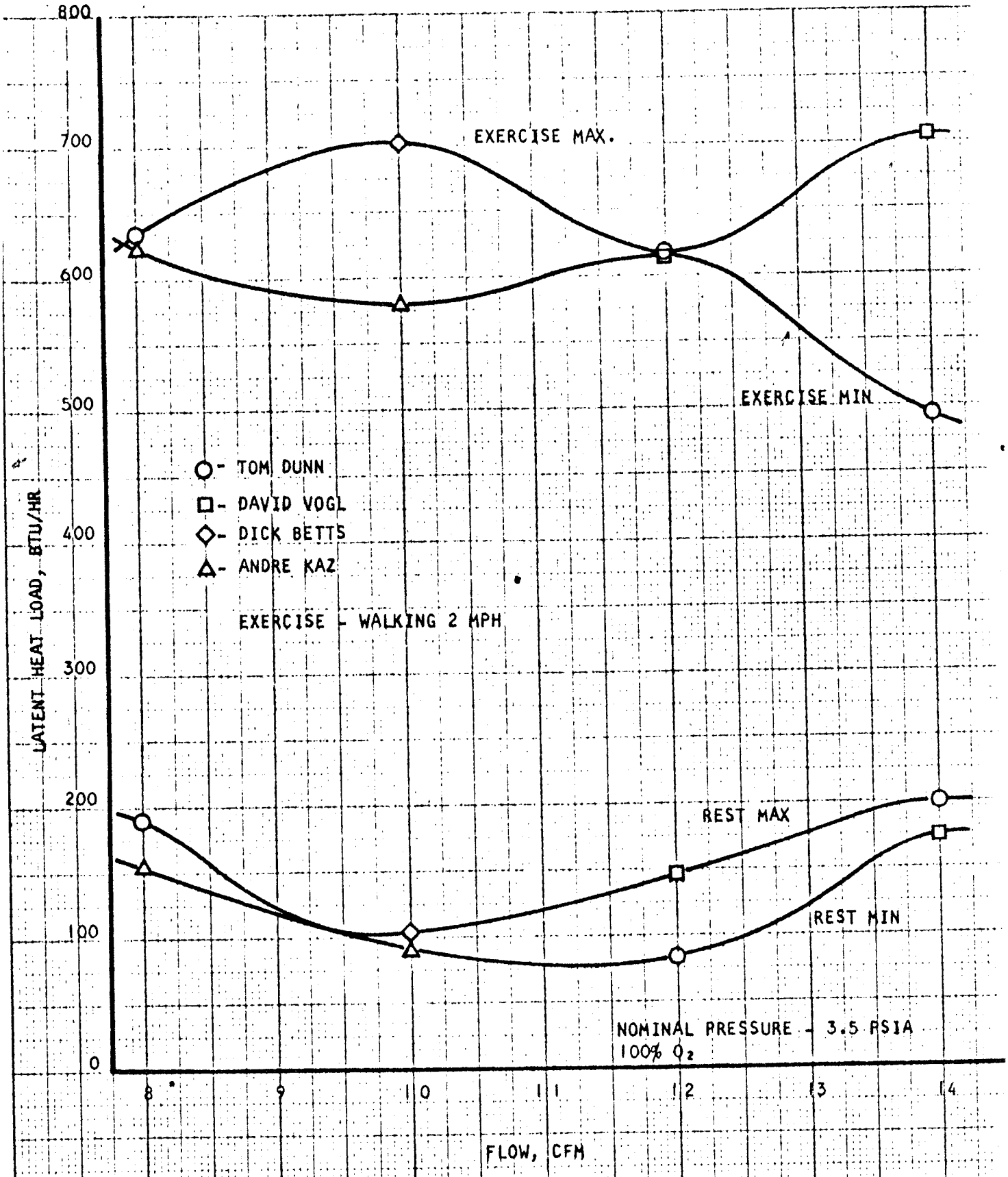

CALCULATED BY	LATENT HEAT TRANSPORTED BY VENT GAS FOR INTERNATIONAL LATEX SUIT	Figure 2
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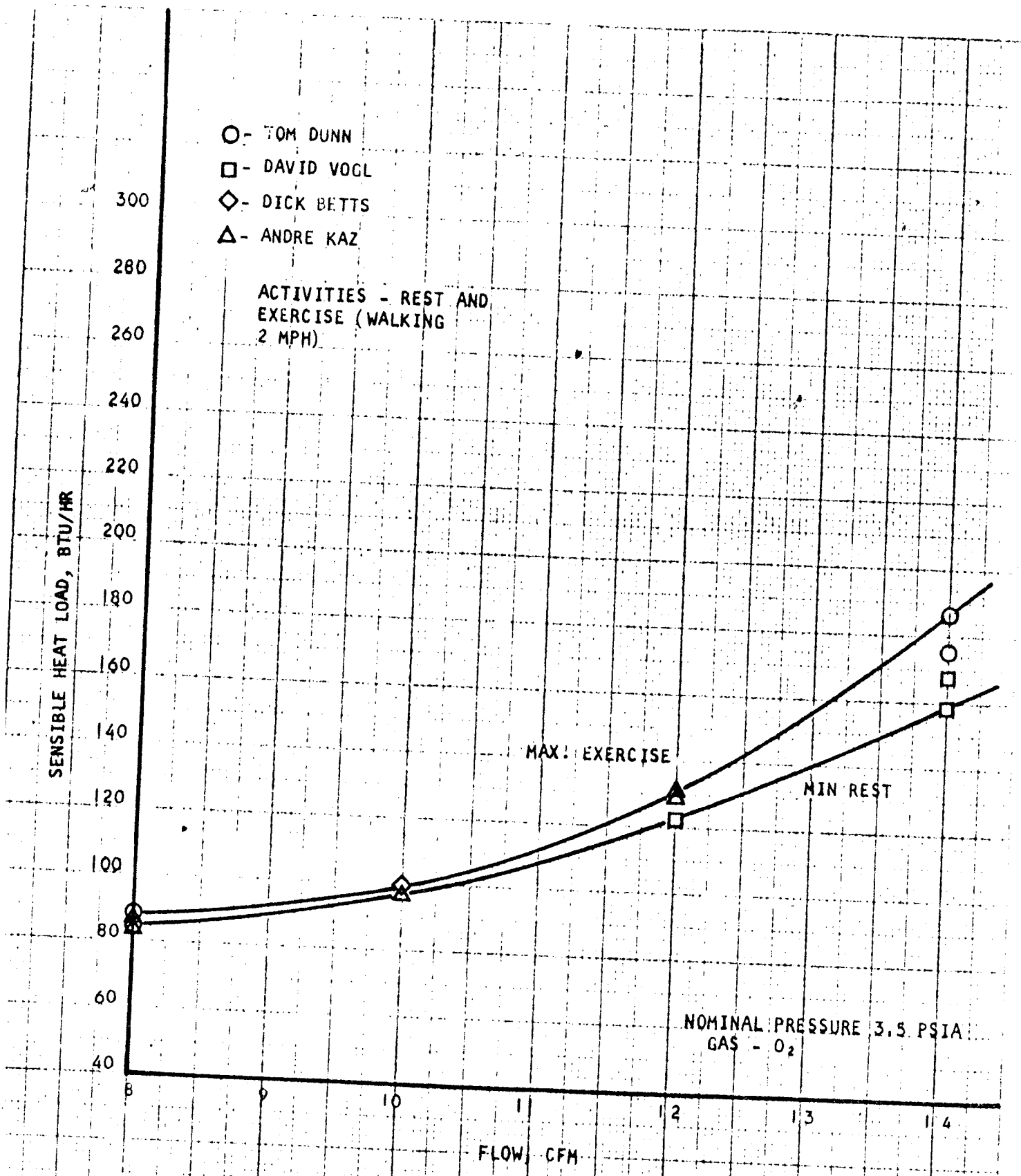

CALCULATED BY	SENSIBLE HEAT TRANSPORTED BY VENT GAS FOR INTERNATIONAL LATEX SUIT	Figure 3
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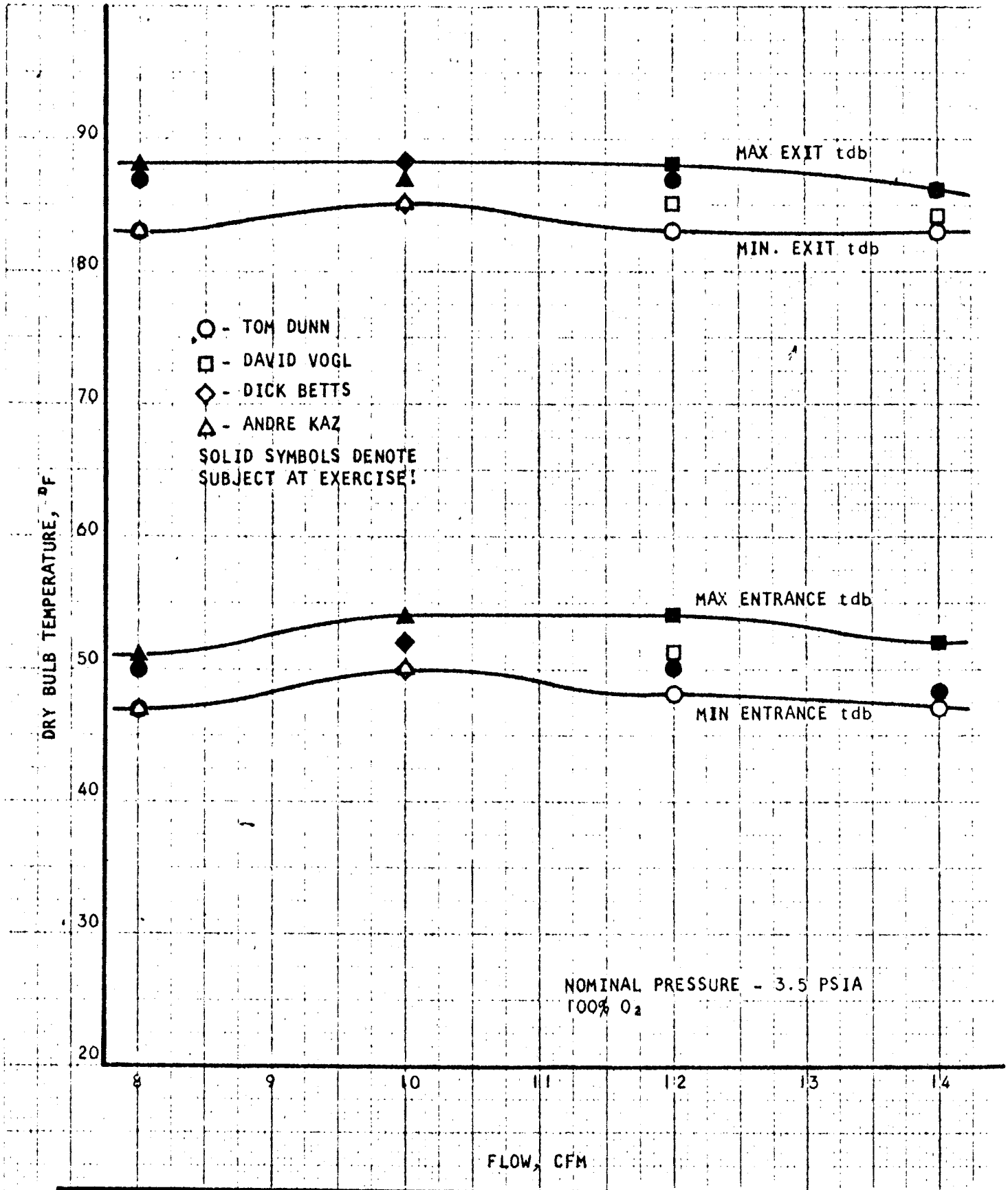

CALCULATED BY		DRY BULB TEMPERATURE OF VENT GAS FOR INTERNATIONAL LATEX SUIT	Figure 4
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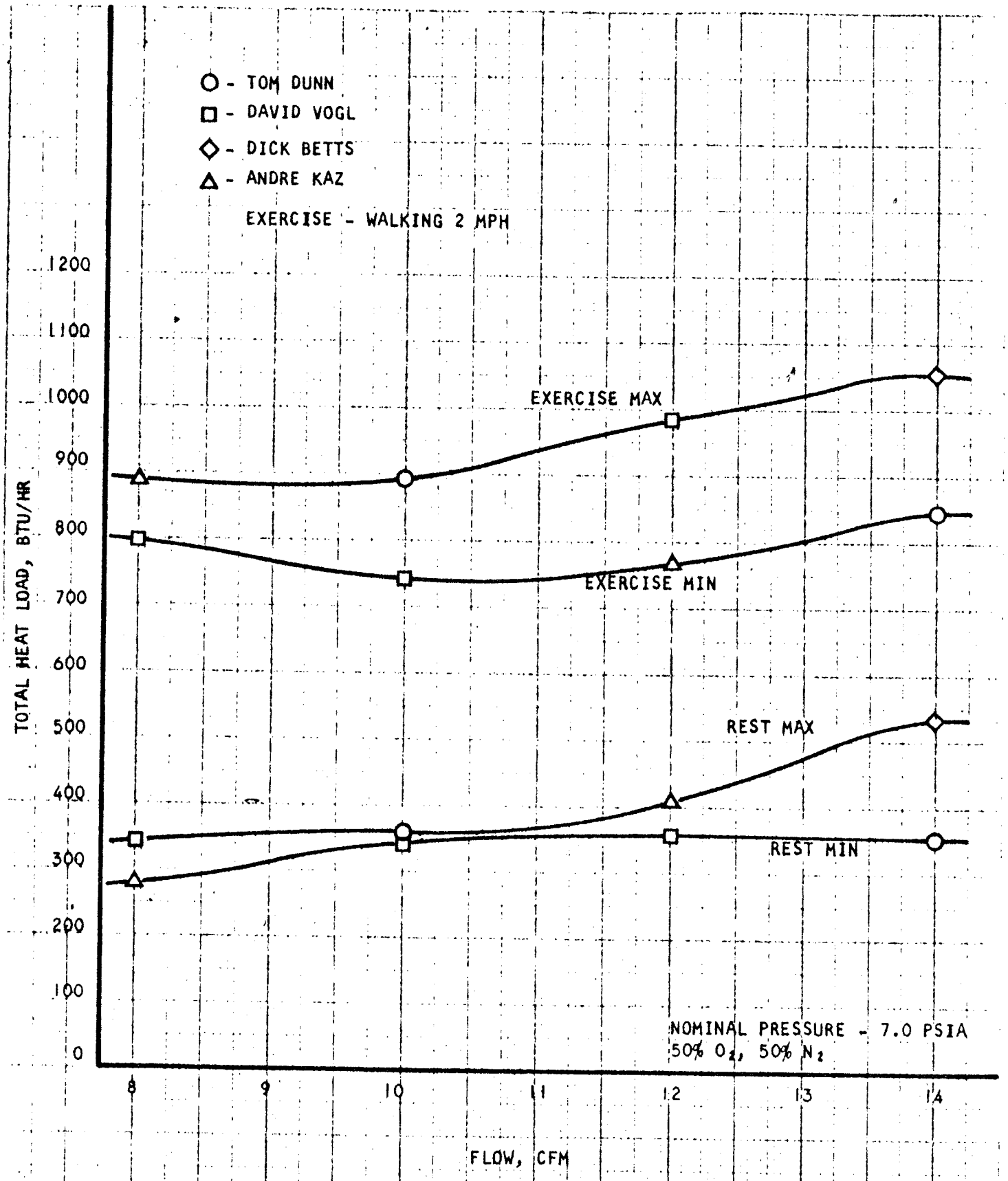

CALCULATED BY		TOTAL HEAT TRANSPORTED BY VENT GAS FOR INTERNATIONAL LATEX SUIT	Figure 5
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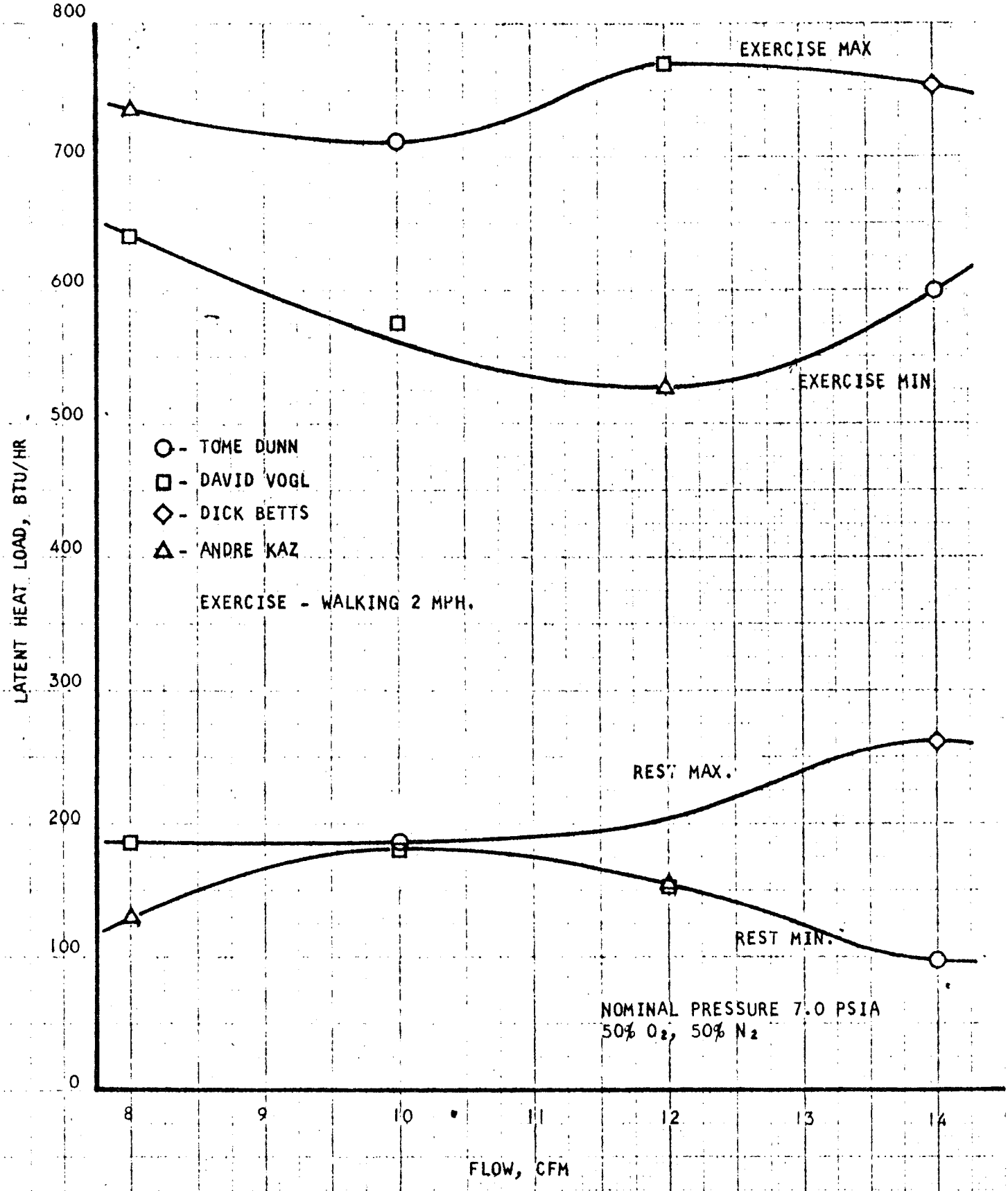

CALCULATED BY			LATENT HEAT TRANSPORTED BY VENT GAS FOR INTERNATIONAL LATEX SUIT	Figure 6
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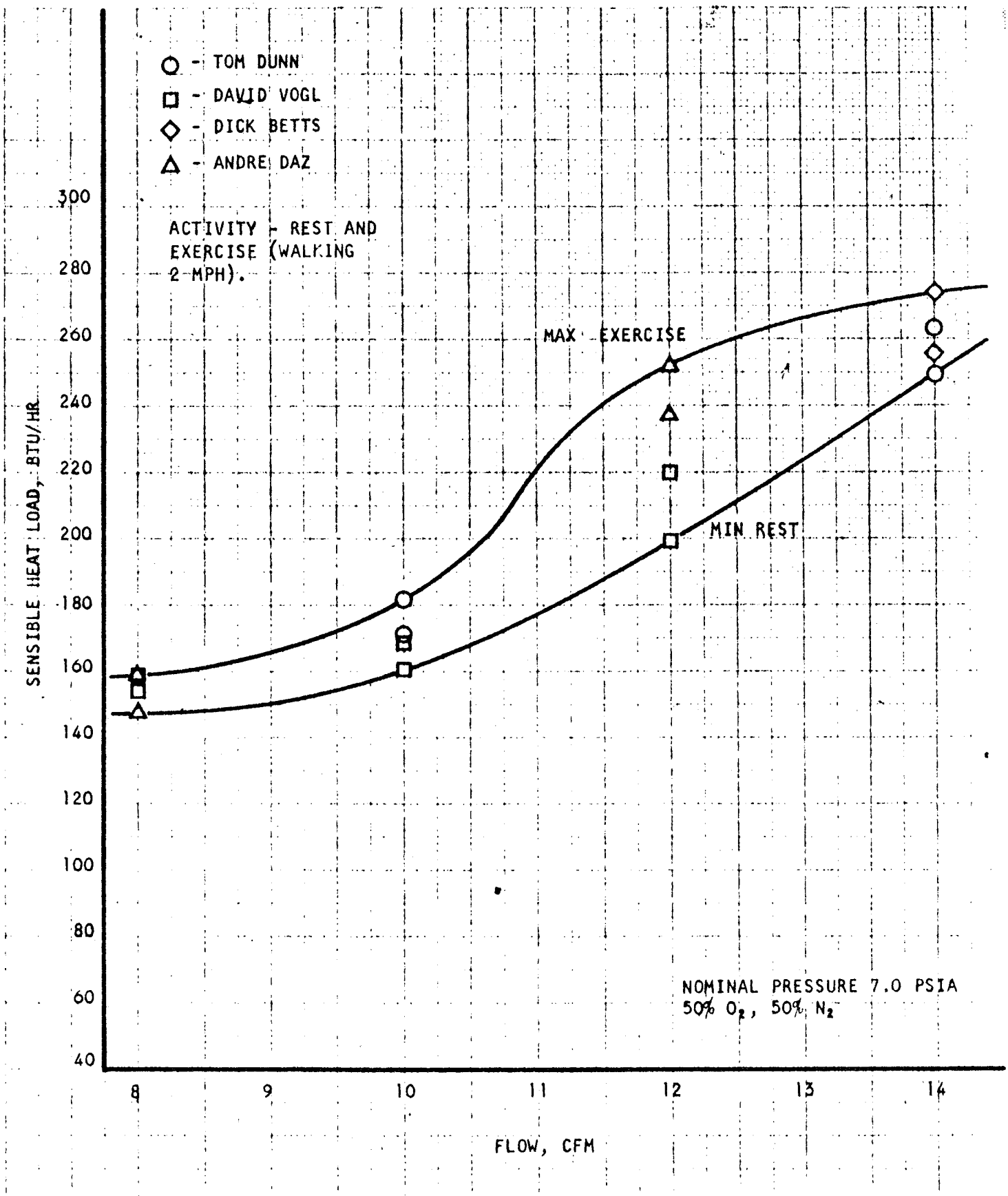

CALCULATED BY			SENSIBLE HEAT TRANSPORTED BY VENT GAS FOR INTERNATIONAL LATEX SUIT	FIGURE 7
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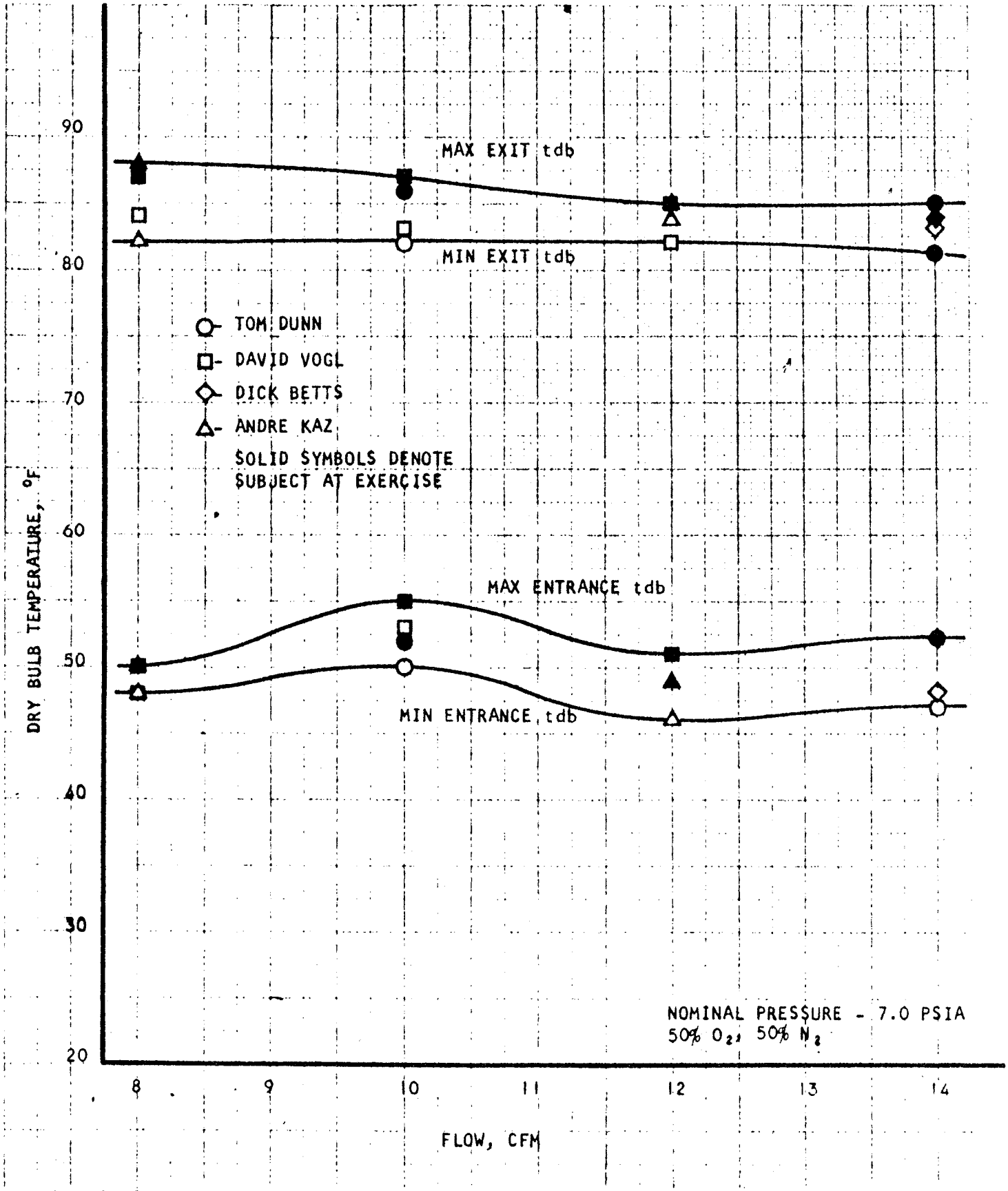

CALCULATED BY			DRY BULB TEMPERATURE OF VENT GAS FOR INTERNATIONAL LATEX SUIT	Figure 8
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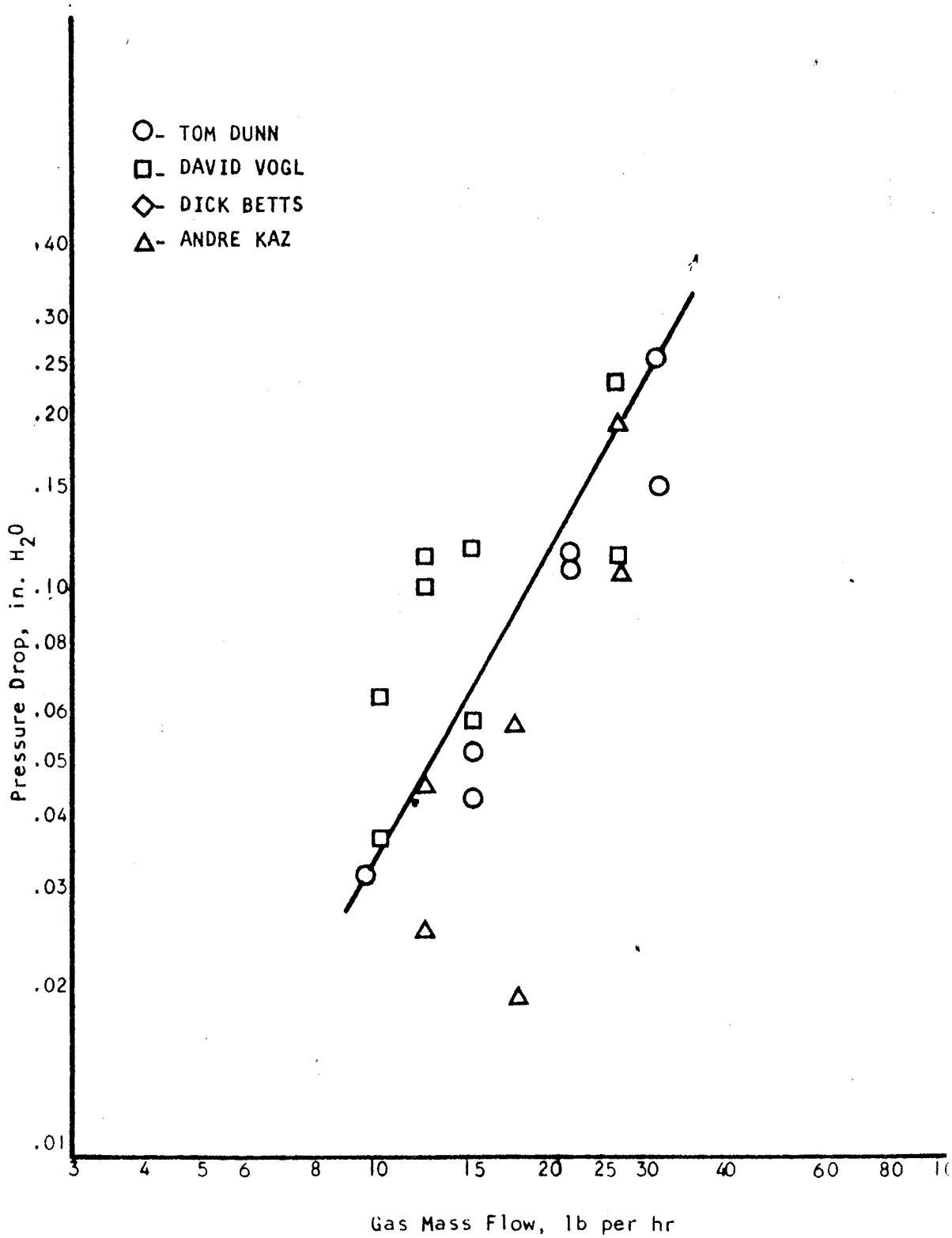

CALCULATED BY			PRESSURE DROP DATA INTERNATIONAL LATEX SUIT	Figure 9
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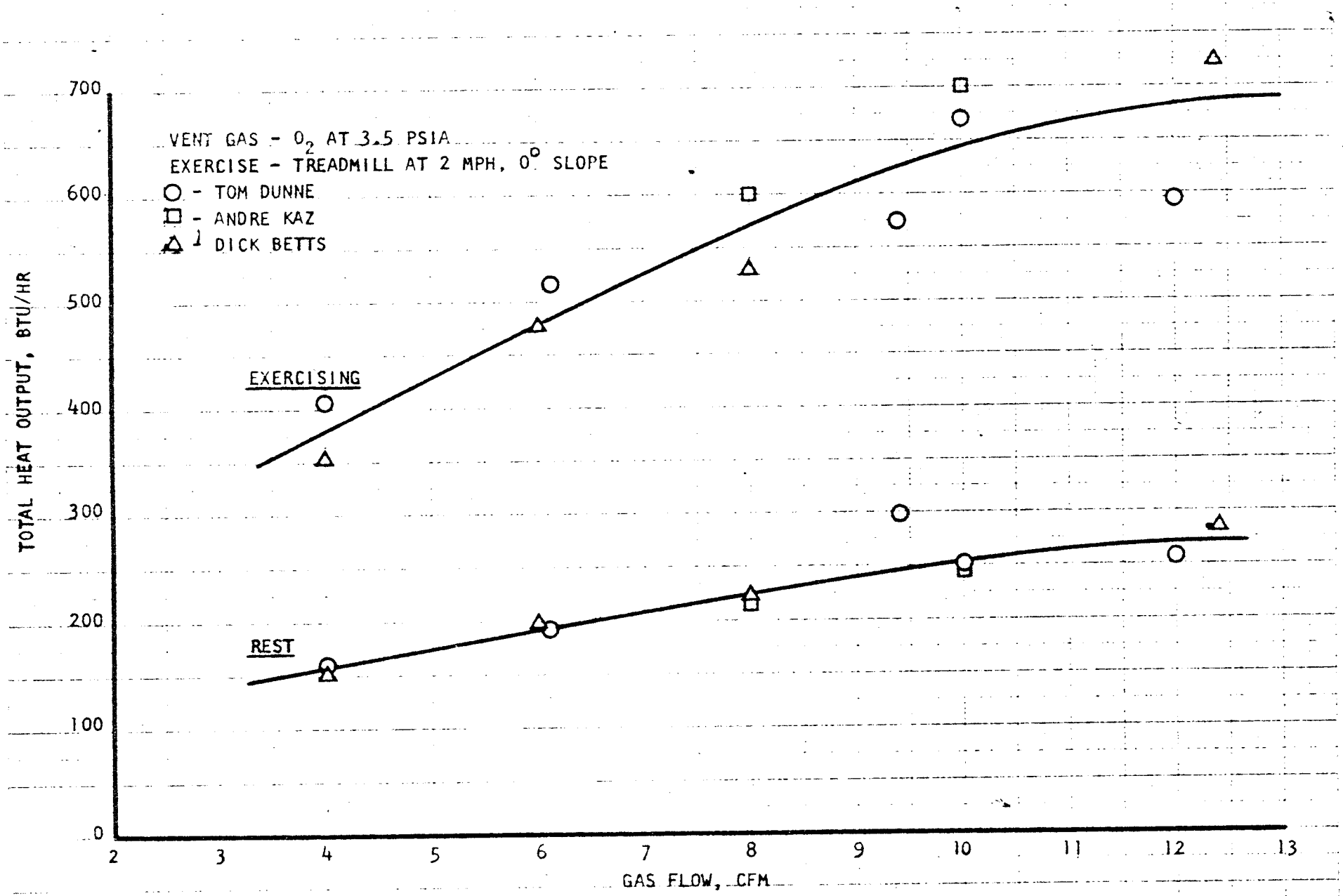

CALCULATED BY	WGN		TOTAL HEAT TRANSPORTED BY VENTILATING GAS FOR MERCURY TYPE SUIT	FIGURE 10
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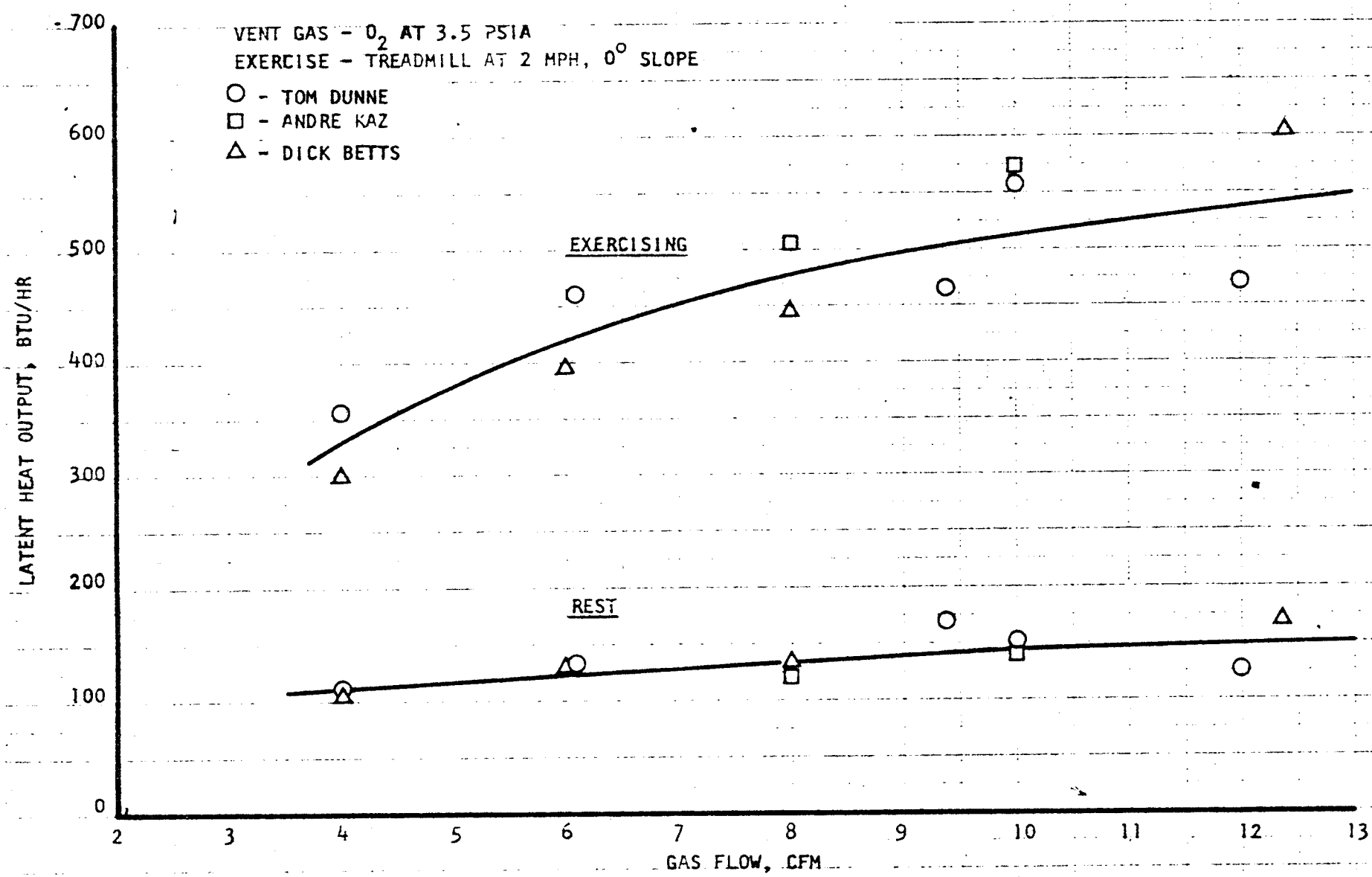

CALCULATED BY	WGN		LATENT HEAT TRANSPORTED BY VENT GAS FOR MERCURY TYPE SUIT	FIGURE 11
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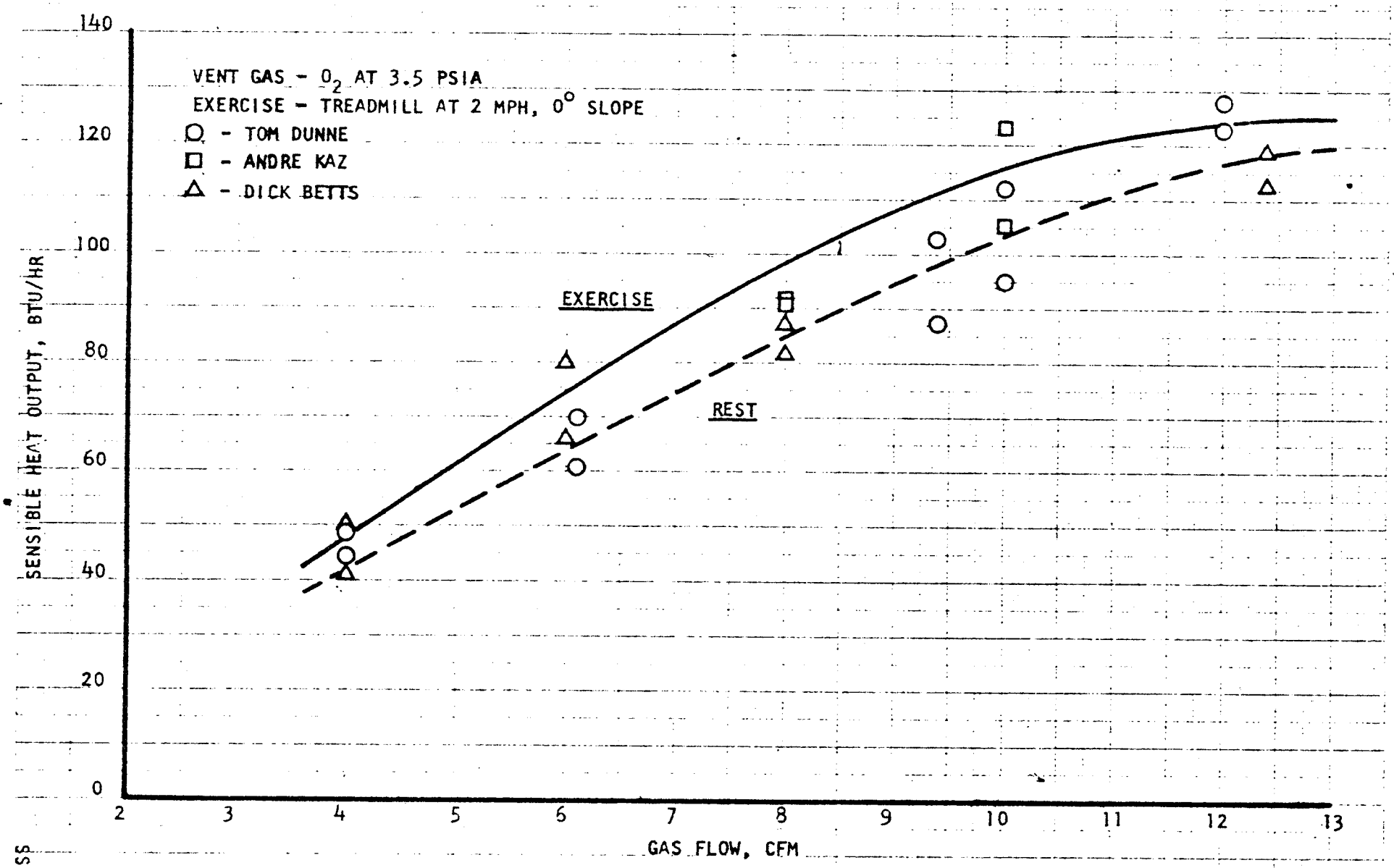

CALCULATED BY	WGN		SENSIBLE HEAT TRANSPORTED BY VENT GAS FOR MERCURY TYPE SUIT	FIGURE 12
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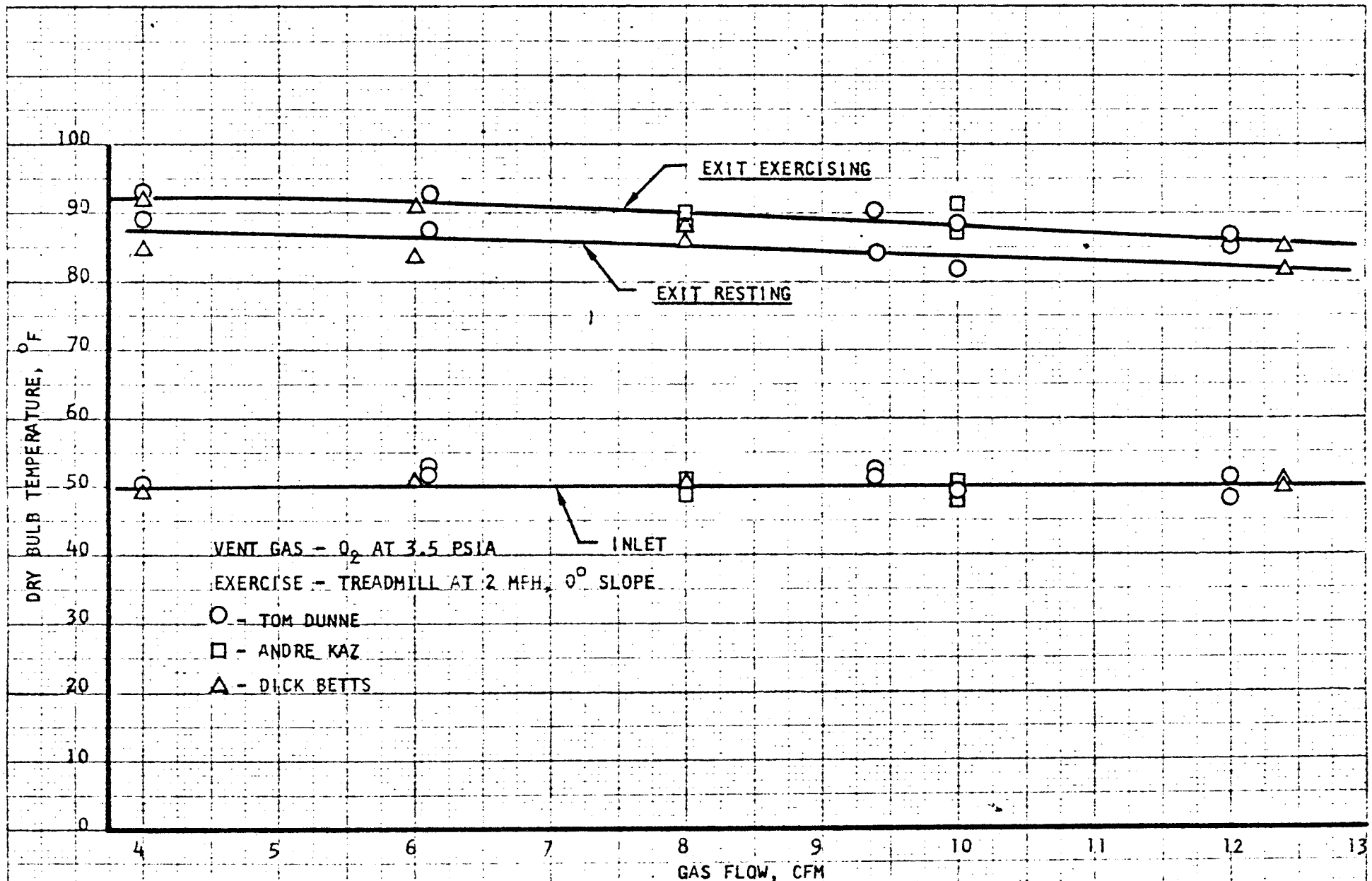

CALCULATED BY	WGN		VENT GAS DRY BULB TEMPERATURES FOR MERCURY SUIT	FIGURE 13
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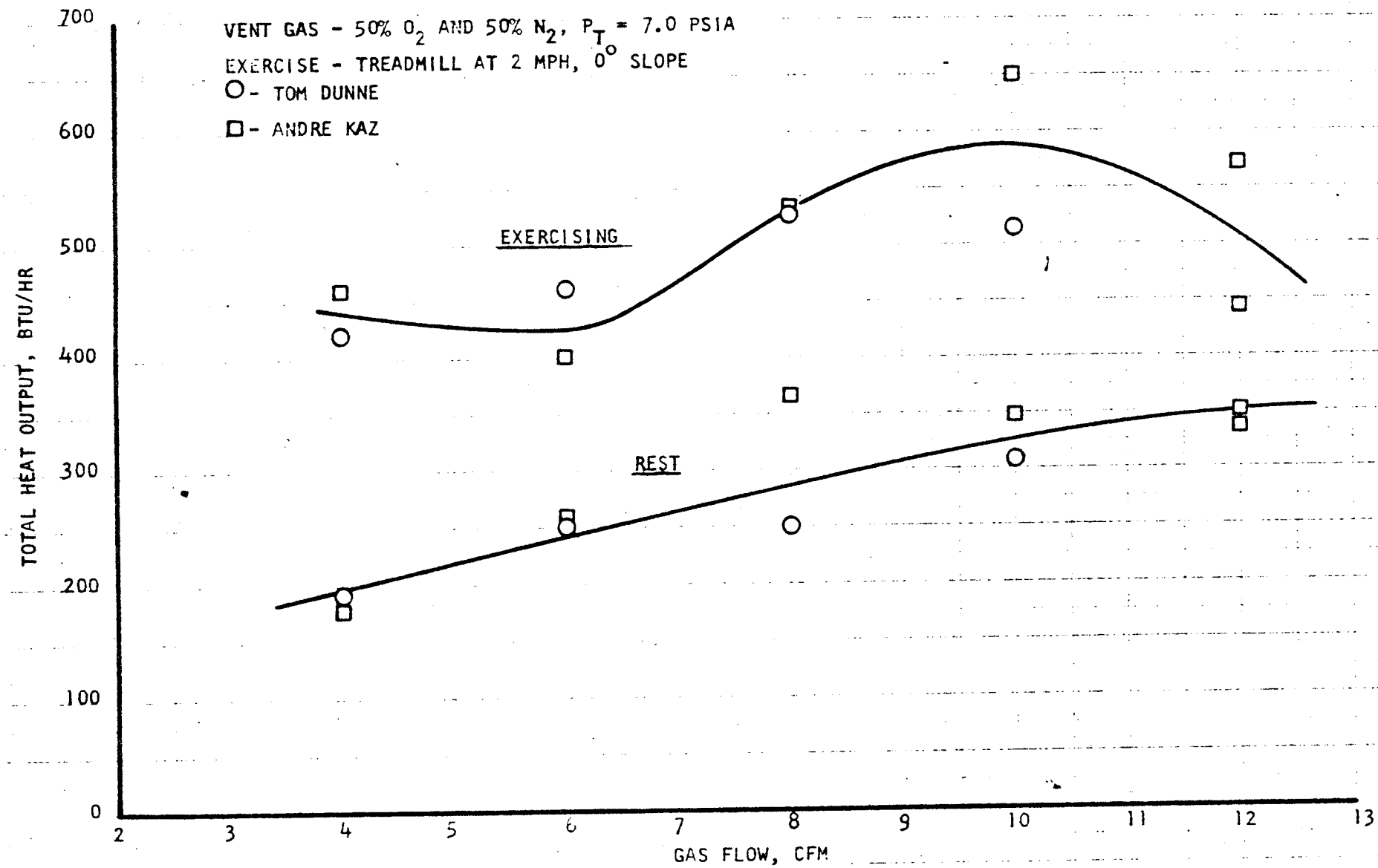

CALCULATED BY	WGN		TOTAL HEAT TRANSPORTED BY VENT GAS FOR MERCURY TYPE SUIT	FIGURE 14
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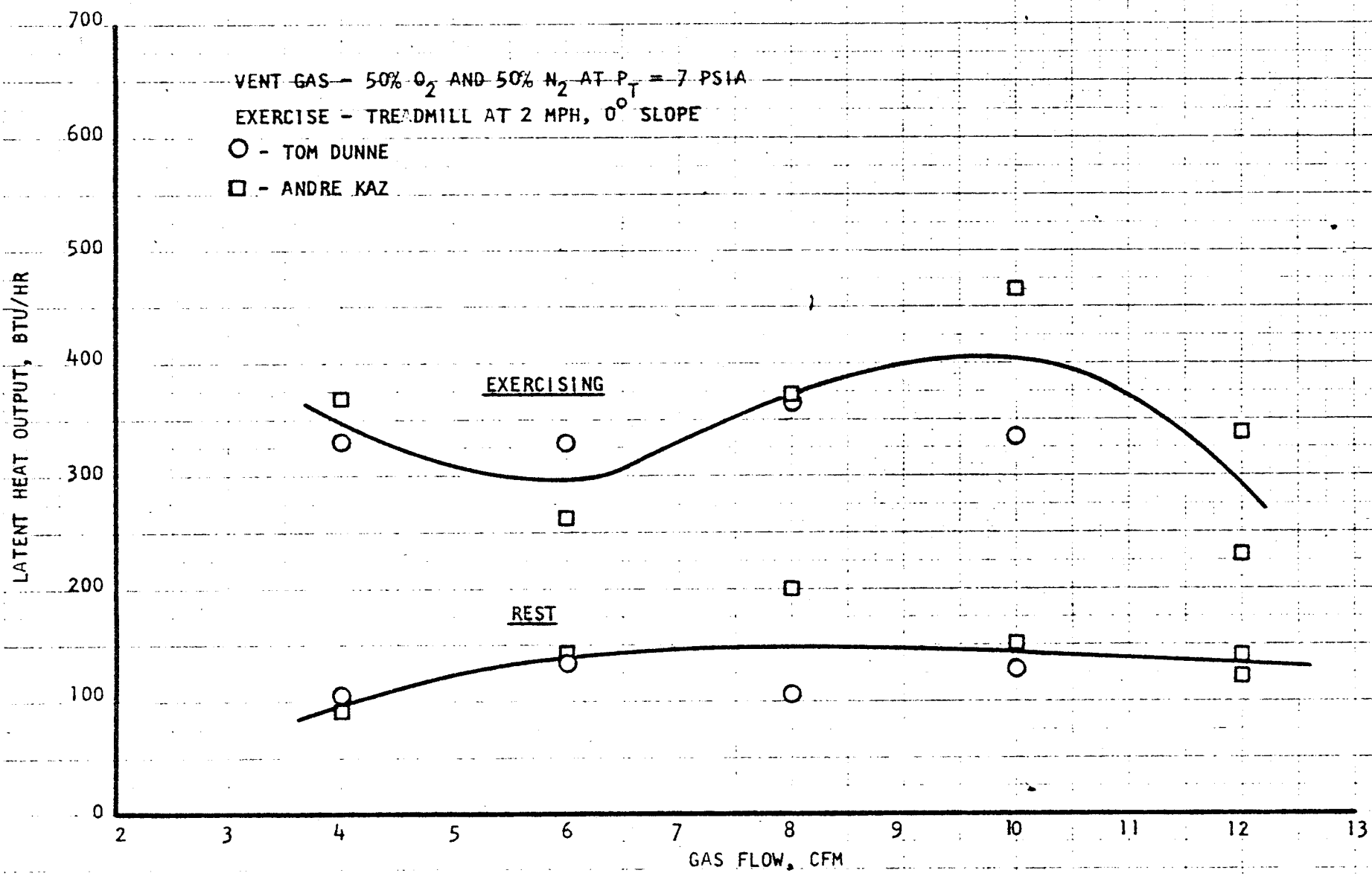

CALCULATED BY	WGN		LATENT HEAT TRANSPORTED BY VENT GAS FOR MERCURY TYPE SUIT	FIGURE 15
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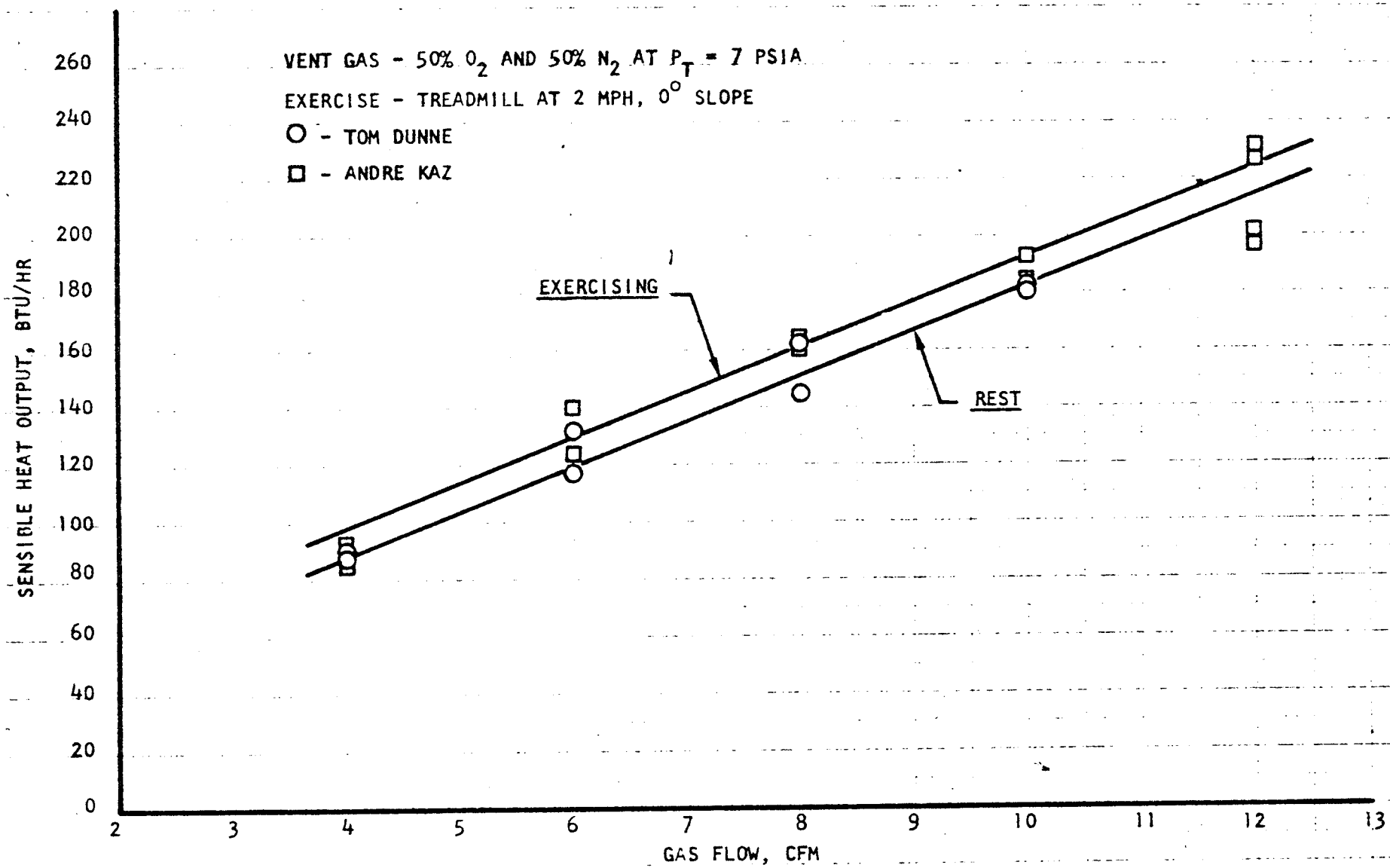

CALCULATED BY	WGN		SENSIBLE HEAT TRANSPORTED BY VENT GAS FOR MERCURY TYPE SUIT	FIGURE 16
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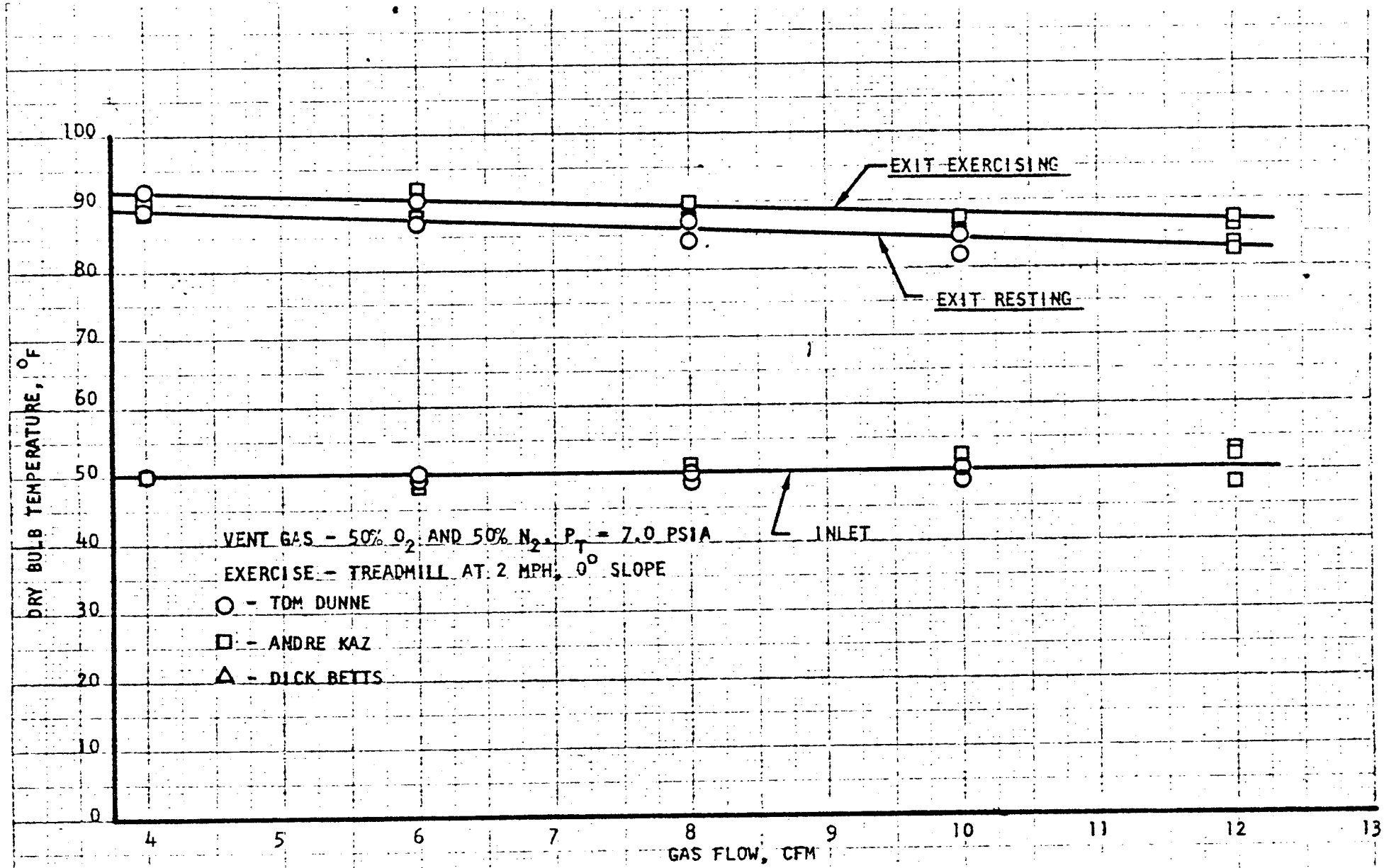

CALCULATED BY	WGN		VENT GAS DRY BULB TEMPERATURES FOR MERCURY SUIT	FIGURE 17
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UNIT NO.				

3.0 TEST FACILITY AND DESCRIPTION

The pressure suit ventilation tests were run in an altitude chamber composed of a main chamber of 750 cubic feet and an air lock chamber of 250 cubic feet. The altitude chamber was equipped with windows for observing the test subjects at altitude and with an oxygen supply consisting of both a main breathing supply and emergency bottles.

The environmental control system loop built for this test was designed specifically to control dew point temperature and flow rate of inlet gas to the full-pressure suits. As shown in the schematic of the test facility, Figure 20, ventilation gas enters a saturation tank through a liquid air vaporizer and pressure regulator. In the saturation chamber the ventilation gas becomes saturated at a high temperature. In testing modes requiring equal dry and wet bulb temperatures, the heat exchanger outside the chamber and directly in line with the saturation tank is bypassed and the gas remains at a high temperature until it is reduced to the desired temperature at a second heat exchanger inside the chamber. In addition, the reheater directly in line with the primary heat exchanger is bypassed for this condition. The ventilation gas enters one of two flow meters which determine ventilation flow after exiting from either the reheater or the bypass line. Next, the gas is ducted to the interior of the chamber and enters the secondary heat exchanger. This heat exchanger provides thermal control for modes of testing at high relative humidity to insure that the desired suit inlet temperature can be achieved without water loss. Air leaving the secondary heat exchanger enters a convoluted flexible hose linking the heat exchanger and the pressure suit inlet port. To avoid temperature rises in the convoluted hose, a coolant line is wrapped directly around the hose. This was found to be necessary to avoid an increase in gas temperature during passage through the convoluted hose. The suit outlet port is connected to a similar convoluted flexible hose which leads to a duct and a back-pressure control valve which facilitates pressurization of the suit. Instrumentation sensors are provided directly at the inlet and outlet ports and are located in the ducting on the connector fitting.

PRESSURE SUIT VENTILATION TEST

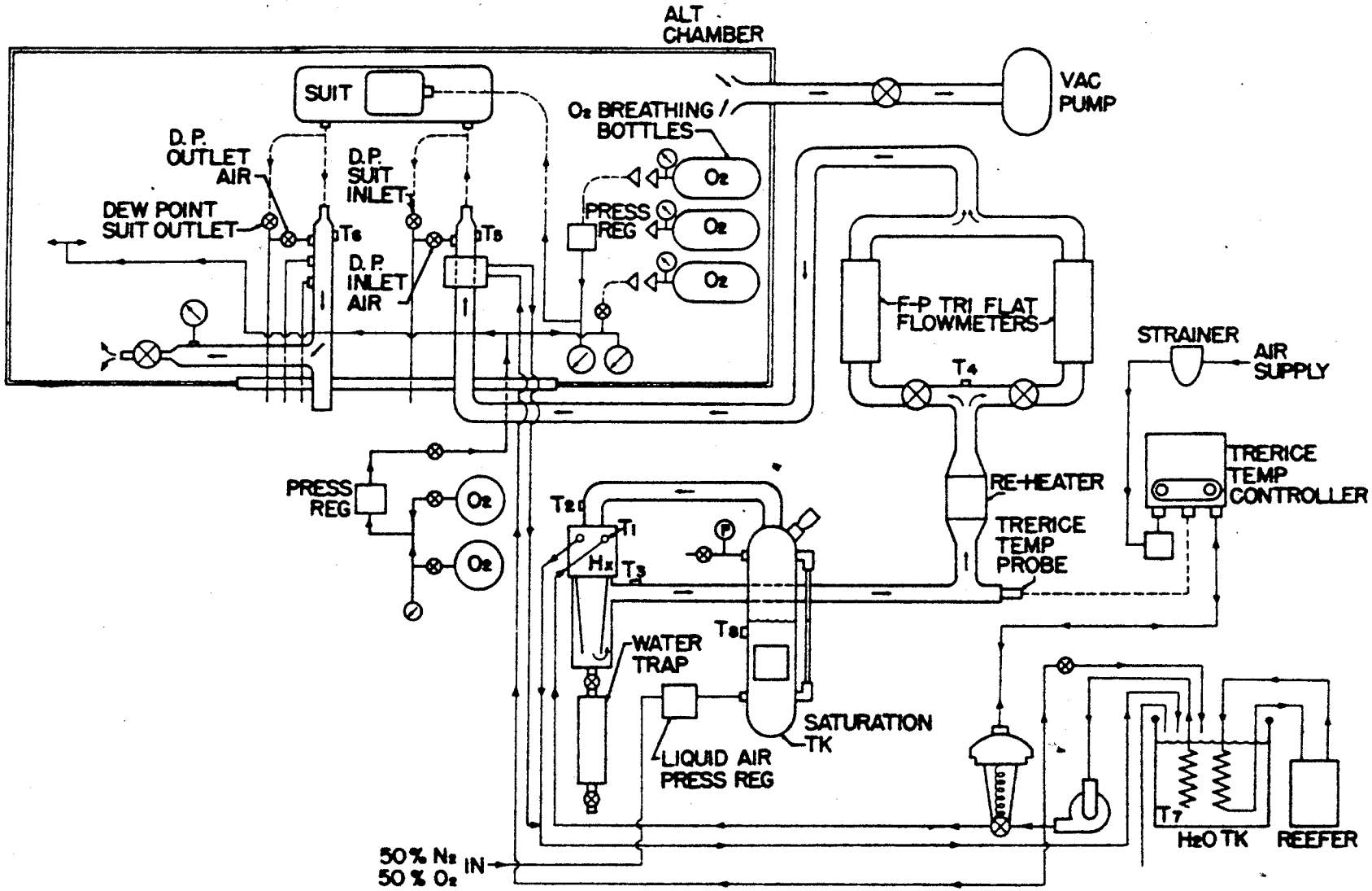

Figure 20
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AiResearch Manufacturing Division

3.0 (Cont) A copper resistance grid was used to determine the average temperature of the suit inlet and outlet air. A copper constantine temperature probe was also located in the ducting. A sample of the inlet and outlet air was drawn from the inlet and outlet port through small heated lines which lead to dew point temperatrue instrumentation outside of the tank. Heating of these lines was required in order to avoid condensation of water during transfer to the instrumentation.

When tests involved relative humidities below saturation, the secondary heat exchanger was not employed. Air leaving the chamber at a high temperature entered the primary heat exchanger and was cooled to a desired inlet dew point temperature. Excess water is also trapped here and removed from the system. The gas then entered the reheater and was heated to the desired dry bulb suit inlet temperature prior to entering the flow meters and system ducting. Temperature determinations were made throughout the system by the use of copper constantine thermocouples and were recorded on a Brown multichannel recorder. All temperatures were noted on the test log so that the test operators would note the presence of malfunctioning equipment or faulty test conditions.

Heat transfer was accomplished by the use of a water-glycol solution pumped through the two heat exchangers and the coolant hose is the coolant sump. The sump was in turn cooled by a Freon refrigeration system.

A treadmill located within the altitude chamber was used to induce desired metabolic loads in the test personnel.

4.0 TEST PROCEDURE

Upon arrival at the test facility, the test subject received a preflight medical examination by the observing M.D. and was immediately instrumented for blood pressure, electrocardiograph, and mean body temperature (by means of a rectal probe).

The test subject donned a full suit of underwear and socks, and the continuity of the bio-instrumentation was then cracked before donning the full-pressure suit. Upon completion of this procedure, the test subject entered the altitude chamber and was connected to the suit loop and instrumentation sensors of the test facility. In tests involving altitudes over 25,000 feet, the test subject, as well as the test observer, was required to breathe 100% oxygen prior to take-off in order to denitrogenate the blood. During this time, all bio-instrumentation, test instrumentation, and desired test conditions were checked again by test personnel. After denitrogenation, the test subject and the test observer were taken to the desired pressure altitude. Upon arrival at the desired altitude, the test subject remained comfortably seated while baseline conditions were recorded for 30 minutes. Upon completion of the baseline mode, the test subject walked on a treadmill for 45 minutes at 2 mph. Following the treadmill exercise period, the test subject was reseated and the altitude chamber was returned to sea level.

Pressure was recorded both automatically and manually during the entire course of the test.

A period of four hours was required for the instrumentation of the test subject, donning and doffing of the full-pressure suit, pre-breathing for denitrogenation, ascent to altitude, gathering of test data and descent to sea level. Tests were run under the following conditions:

Pressure, psi	3.5 and 7
Flow Rate, cfm	4,6,8,10,12 for the Mercury suit, 8,10,12,14 for the International Latex suit, 4 for the Navy MK-IV suit.
Inlet Dry Bulb Temperature, ^{o}F	50
Inlet Dew Point Temperature, ^{o}F	50

5.0 DISCUSSION OF TEST RESULTS

The test results presented in Figures 1 through 19 show the variation of the metabolic heat transferred to the suit air and temperatures at the suit exit for various suit flows. A complete tabulation of test results are shown in Tables 1, 2 and 3. There are a number of general results which may be of use as design criteria which will be discussed.

The suit exit dry bulb temperature is fairly constant, between 82°F and 91°F, for the Mercury suit. (i.e. independent of crew heat output). For the International Latex suit the exit dry bulb temperature remains between 83°F and 87°F. The volumetric flow rate appeared to be the controlling factor for determining the precise exit dry bulb temperature for both types of suits. Thus the data obtained can be used to establish suit exit gas temperatures when the flow rate is known.

Since the suit exit temperature is relatively constant, the sensible heat output must be a function of flow only. The plots for sensible heat and vent gas flow rate show that this is approximately correct. The plots of sensible heat are nearly straight line variations which means the sensible heat transported is directly proportional to the vent gas flow rate.

The results of latent heat variation with gas flow shows a wide dispersion; however in general the latent heat is relatively constant. An exception to this is the latent heat for the Mercury suit at 3.5 psi which resulted in an increasing latent heat with gas flow. The maximum latent heat for exercise was considerably higher for the International Latex suit (870 Btu/hr) than for the Mercury suit (600 Btu/hr).

In general the total heat output of the suit occupant increased slightly with gas flow due to the sensible increasing heat component of the total heat. However, the total metabolic heat output is essentially dependent upon the level of activity only. Thus the total heat should be a constant. The probable reason for the total heat variation with flow is that sensible heat is flowing

5.0 (Cont) through the suit wall at a rate which is a function of flow rate. Consequently the total heat output should not be used in itself for design purposes. The sensible heat flow through the suit wall has the effect of decreasing the portion of the total heat removed in the form of sensible heat. Assuming the exit gas temperature remains approximately constant, the true latent heat is higher than the recorded value, and the recorded sensible is near the true value. This phenomnon follows from the test results because the sensible heat removed is controlled by the vent gas flow, (the inlet and outlet temperatures are nearly independent of flow) and consequently the latent will be the total heat output less the sensible heat removed.

Considerable work has been done in the pase to establish accurate values of total metabolic heat output at various activities. The suit tests yielded approximate total heat outputs to substantiate these values. However, the more important results establish the breakdown of sensible and latent heat in pressure suit applications.

TEST DESCRIPTION	TEST NO.	VENT GAS FLOW (CFM)	CABIN ALTITUDE x 10^{-3} (FT)	SENSIBLE HEAT FLOW (BTU/HR)	LATENT HEAT FLOW (BTU/HR)	TOTAL HEAT FLOW (BTU/HR)	DRY BULB TEMPERATURES (°F) INLET	OUTLET	ACTIVITY **	SUBJECT *	SUIT ΔP ("H_2O)
7.0 PSIA-50% O_2 AND 50% N_2,	58	8	19	159	734	893	50	88	E	AK	.5-1.5
INTERNATIONAL LATEX SUIT	58	8	19	148	129	277	48	82	R	AK	.5-1.5
	57	10	19	171	183	354	50	82	R	TD	2.8-3.0
	57	10	19	182	710	892	52	86	E	TD	2.8-3.0
	55	10	19	161	178	339	53	83	R	DV	4.7-5.3
	55	10	19	169	574	743	55	87	E	DV	4.7-5.3
	56	8	19	154	185	339	48	84	R	DV	1.7-3.0
	56	8	19	158	640	798	50	87	E	DV	1.7-3.0
	51	12	19	199	151	350	51	82	R	DV	5.0-6.0
	51	12	19	220	765	987	51	85	E	DV	5.0-6.0
	46	12	19	251	153	404	46	84	R	AK	2.8-5.0
	46	12	19	238	526	764	49	85	E	AK	2.8-5.0
	44	14	19	273	260	533	48	83	R	DB	--
	44	14	19	254	151	1055	52	84	E	DB	--
	45	14	19	262	94	356	47	81	R	TD	5.9-6.5
	45	14	19	247	597	844	52	85	E	TD	5.9-6.5
3.5 PSIA-100% O_2,	53	8	34	86	189	275	47	83	R	TD	0-1.5
INTERNATIONAL LATEX SUIT	53	8	34	89	632	721	50	87	E	TD	0-1.5
	54	8	34	86	155	241	47	83	R	AK	--
	54	8	34	88	623	711	51	88	E	AK	--
	50	10	34	103	91	194	50	85	R	AK	1.2-2.2
	50	10	34	98	580	678	54	87	E	AK	1.2-2.2
	52	10	34	105	102	207	50	85	R	DB	--
	52	10	34	106	702	808	52	88	E	DB	--
	47	12	34	122	144	266	51	85	R	DV	2.8-5.5
	47	12	34	121	614	735	54	88	E	DV	2.8-5.5
	49	12	34	128	82	211	48	83	R	TD	2.0-2.4
	49	12	34	131	618	749	50	87	E	TD	2.0-2.4
	42	14	34	175	199	374	47	83	R	TD	--
	42	14	34	185	492	677	48	86	E	TD	--
	43	14	34	158	173	331	52	84	R	DV	--
	43	14	34	168	705	873	52	86	E	DV	--

* T.D. - Tom Dunn
D.V. - David Vogal
D.B. - Dick Betts
A.K. - Andre Kaz

** E - Exercise
R - Rest

ALTITUDE EQUIPMENT DIVISION
CALCULATED
RECORDED
DRAWN
CHECKED
APPROVED

SUIT TEST RESULTS
INTERNATIONAL LATEX SUIT

TABLE I

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

TEST DESCRIPTION	TEST NO.	VENT GAS FLOW (CFM)	CABIN ALTITUDE x 10 (FT)	SENSIBLE HEAT FLOW (BTU/HR)	LATENT HEAT FLOW (BTU/HR)	TOTAL HEAT FLOW (BTU/HR)	DRY BULB TEMPERATURE (°F) INLET	OUTLET	ACTIVITY **	SUBJECT *	SUIT ΔP ("H_2O)
7.0 PSIA-50% O_2 AND 50% N_2,	31	4	19	88	103	191	50	89	R	AK	--
MERCURY TYPE SUIT.	31	4	19	90	330	420	50	90	E	AK	--
	32	4	19	86	90	176	50	88	R	TD	--
	32	4	19	93	368	461	50	91	E	TD	--
	33	6	19	116	133	244	50	87	R	TD	--
	33	6	19	132	330	462	49	90	E	TD	--
	34	6	19	124	136	260	49	88	R	AK	--
	34	6	19	140	264	404	48	92	E	AK	--
	35	8	19	144	106	250	50	84	R	TD	--
	35	8	19	162	362	524	49	87	E	TD	--
	36	8	19	164	202	366	49	88	R	AK	--
	36	8	19	161	371	532	51	90	E	AK	--
	37	10	19	180	129	309	49	82	R	TD	--
	37	10	19	182	334	516	51	85	E	TD	--
	38	10	19	192	151	343	50	86	R	AK	--
	38	10	19	184	466	650	53	88	E	AK	--
	39	12	19	196	141	337	53	84	R	AK	--
	39	12	19	210	232	442	54	86	E	AK	--
	41	12	19	227	123	350	48	83	R	AK	--
	41	12	19	232	340	572	52	88	E	AK	--
3.5 PSIA-100% O_2,	22	4	34	44	114	158	50	88	R	TD	--
MERCURY TYPE SUIT	22	4	34	48	360	408	50	92	E	TD	--
	26	4	34	41	110	151	48	84	R	DB	--
	26	4	34	50	304	354	48	91	E	DB	--
	24	6	34	66	133	199	50	83	R	DB	--
	24	6	34	80	397	477	50	90	E	DB	--
	21	6.1	34	60	132	192	52	87	R	TD	--
	21	6.1	34	71	448	519	51	92	E	TD	--
	20	6	34	59	98	157	47	58	R	TD	--
	20	6	34	66	298	364	48	73	E	TD	--
	25	8	34	92	123	215	48	88	R	AK	--
	25	8	34	91	506	597	50	90	E	AK	--
	27	8	34	82	139	221	50	86	R	DB	--
	27	8	34	87	447	534	50	88	E	DB	--

* T.D. - Tom Dunn
D.V. - David Vogal
D.B. - Dick Betts
A.K. - Andre Kaz

** E - Exercise
R - Rest

ALTITUDE EQUIPMENT DIVISION
CALCULATED
RECORDED
DRAWN
CHECKED
APPROVED

SUIT TEST RESULTS
MERCURY TYPE SUIT

TABLE 2

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

TEST DESCRIPTION	TEST NO.	VENT GAS FLOW (CFM)	CABIN ALTITUDE x 10^{-3} (FT)	SENSIBLE HEAT FLOW (BTU/HR)	LATENT HEAT FLOW (BTU/HR)	TOTAL HEAT FLOW (BTU/HR)	DRY BULB TEMPERATURES (°F) INLET	OUTLET	ACTIVITY **	SUBJECT *	SUIT ΔP (" H_2O)
3.5 PSIA-100% O_2,	19	8	34	91	170	261	50	82	R	DB	--
MERCURY TYPE SUIT	19	8	34	108	384	492	51	85	E	DB	--
	20	9.4	34	94	103	197	47	58	R	TD	--
	20	9.4	34	102	472	574	48	73	E	TD	--
	23	10	34	95	154	249	49	82	R	TD	--
	23	10	34	112	560	672	49	88	E	TD	--
	30	10	34	105	141	246	50	87	R	AK	--
	30	10	34	123	576	699	49	91	E	AK	--
	29	12	34	128	128	256	48	85	R	TD	--
	29	12	34	123	472	595	51	87	E	TD	--
3.5 PSIA-100% O_2,	16	4	34	26	301	327	67	91	R	TD	--
NAVY MK IV SUIT	16	4	34	26	301	327	67	91	E	TD	--
	18	4	34	46	42	88	52	86	R	DV	--
	18	4	34	48	244	292	54	90	E	DV	--

* T.D. - Tom Dunn
D.V. - David Vogal
D.B. - Dick Betts
A.K. - Andre Kaz

** E - Exercise
R - Rest

ALTITUDE EQUIPMENT DIVISION
CALCULATED
RECORDED
DRAWN
CHECKED
APPROVED

SUIT TEST RESULTS
INTERNATIONAL LATEX SUIT
AND
NAVY MK IV SUIT

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

TABLE 3

SC-1018-R

6.0 DATA REDUCTION PROCEDURE

Symbols

C_p - Specific Heat

h - Enthalpy

H - Heat flow per unit time

MW - Molecular weight

P - Gas pressure

Q - Volumetric flow

R - Gas constant

T - Temperature

W - Mass flow

Subscripts

1 - Suit Inlet

2 - Suit outlet

db - Dry bulb

L - Latent heat

M - Gas mixture

S - Sensible heat

CO_2 - Carbon dioxide component

O_2 - Oxygen component

H_2 - Nitrogen component

H_2O - Water vapor component

Latent Heat Produced

$$H_L = h\Delta W_{H_2O}$$

$$\Delta W_{H_2O} = W_{(H_2O)_2} - W_{(H_2O)_1} = \frac{P_{(H_2O)_2}\ Qm_2}{R_{H_2O}\ (T_{db_2})} - \frac{P_{(H_2O)_1}\ Qm_1}{R_{H_2O}\ (T_{db_1})}$$

therefore;

$$H_L = \frac{h}{R_{H_2O}} \left(\frac{P_{(H_2O)_2}\ Qm_2}{T_{db_2}} - \frac{P_{(H_2O)_1}\ Qm_1}{T_{db_1}} \right)$$

where,

$$Qm_2 = \frac{Wm_2\ Rm_2\ T_{db_2}}{Pm_2}$$

$$Wm_2 = Wm_1 + \Delta W_{H_2O} + \Delta W_{CO_2} - \Delta W_{O_2}$$

$$Rm_2 = \frac{1545}{MWm_2}$$

$$MWm_2 = \frac{P_{(CO_2)_2}}{Pm_2}\ 44 + \frac{P_{(H_2O)_2}}{Pm_2}\ 18 + \frac{P_{(O_2)_2}}{Pm_2}\ 32 + \frac{P_{(N_2)_2}}{Pm_2}\ 28$$

$$Pm_2 = Pm_1 - \Delta P\ \text{Suit}$$

$$Pm_1 = P_{cabin} + \Delta P\ \text{Suit/cabin}$$

Sensible Heat Produced

$$H_S = C_{p_2} Wm_2 T_{db_2} - C_{p_1} Wm_1 T_{db_1}$$

where,

$$Wm_1 = \frac{Pm_1 \; Qm_1}{Rm_1 \; T_{db_1}}$$

$$Rm_1 = \frac{1545}{MWm_1}$$

$$MWm_1 = \frac{P_{(CO_2)_1}}{Pm_1} 44 + \frac{P_{H_2O_1}}{Pm_1} 18 + \frac{P_{(O_2)_1}}{Pm_1} 32 + \frac{P_{(N_2)_1}}{Pm_1} 28$$

$$Cp = WT.\ \%\ CO_2\ (.205) + WT\%\ O_2\ (.22) + WT\%\ N_2\ (.248) + WT\%\ H_2O(.460)$$

7.0 TEST DATA

Test data applicable to the pressure suit test program is presented in tables included in this report titled "Test Data".

PRESSURE VESSEL PLATFORM TEST

Experiment No. 1

Test Subject Don Morgan

Altitude

Treadmill Speed

Suit Ventilation Rate

Dew Point Temperature

Suit Inlet Temperature

DATE May 7, 1962

Time	11:00	11:15	11:20
Water Cooling In	35	34	33
Heat Exchanger In	84	82	83
Heat Exchanger Out	50	50	49
Reheater Out	50	50	52
Suit In	52	50	52
Suit Out	57	57	57
Water Tank (Chiller)	32	30	30
Water Saturation Tank	82	83	85
Flowrate, Suit Ventilation	6	6	6
Dew Point, Suit In	42	44	44
Dew Point, Suit Out	54	52	49
System Pressure	6.3	6.3	6.3
Suit Pressure			
Humidity Controller (Tropics)	52	52	52
Altitude			
O_2 Consumption (l/min)			
CO_2 Production (l/min)			
Pulse Rate			
Blood Pressure			
Respiration Rate			
Body Temperature			
Comfort Level			

	Weight Before Test	Weight After Test
O_2 Bottle #1		
O_2 Bottle #2		
O_2 Bottle #3		

ALTITUDE EQUIPMENT DIVISION	
CALCULATED	
RECORDED	
DRAWN	
CHECKED	
APPROVED	

TEST DATA

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

SS-1018-R

PRESSURE VENTILATION TEST

Experiment No. 2

Test Subject Tom Harrington

Altitude

Treadmill Speed

Suit Ventilation Rate

Dew Point Temperature

Suit Inlet Temperature

DATE May 7, 1962

Time	1330	1341	1355	1414	1430	1454
Water Cooling In °F	36	34	35	35	36	36
Heat Exchanger In °F	87	90	89	90	90	81
Heat Exchanger Out °F	51	50	50	50	50	51
Reheater Out °F	54	53	53	53	53	52
Suit In °F	54	53	53	53	53	52
Suit Out °F	62	60	60	60	60	62
Water Tank (Chiller) °F	32	32	32	32	32	35
Water Saturation Tank °F	89	90	90	90	90	81
Flowrate, Suit Ventilation cfm	4	6	6	6	8	12
Dew Point, Suit In °F	34	49.5	44	-	44.4	50.0
Dew Point, Suit Out °F	-	-	-	-	-	-
System Pressure in. Hg	8.5	6.3	6.3	6.3	6.7	10.5
Suit Pressure in. H_2O						
Humidity Controller (Period) °F	52	52	52	52	52	52
Altitude						
O_2 Consumption (L/min)						
CO_2 Production (L/min)						
Pulse Rate						
Blood Pressure						
Respiration Rate						
Body Temperature						
Comfort Level						

Suit felt tight (pressure in suit 4.8" H_2O). Seemed to have excessive flow. Goodrich suit used. Flow increased to 8 cfm 9.0"H_2O Suit pressure.

14:38 O_2 Off suit hose off

14:41 O_2 On (Suit pressure from 9.3 to 11.00"H_2O)

14:53 12 cfm suit pressure 16.0 to 17.8 "H_2O

15:00 Flow to 4 cfm to check dew point - 51°

15:00 O_2 Changed. Suit pressure to 2.4"H_2O at 4 cfm

Dew Point changed to upstream of flex hose D.P. 37°

	Weight Before Test	Weight After Test
O_2 Bottle #1		
O_2 Bottle #2		
O_2 Bottle #3		

ALTITUDE EQUIPMENT DIVISION

CALCULATED		
RECORDED		
DRAWN		
CHECKED		
APPROVED		

TEST DATA

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

SS-1018-R

PRESSURE VENTILATION TEST

Experiment No. 3

Test Subject Dick Betts

Altitude

Treadmill Speed

Suit Ventilation Rate

Dew Point Temperature

Suit Inlet Temperature

DATE May 9, 1962

Time	0950	10:10	10:20	10:40	10:50	11:02	
Water Cooling In °F	36	36	36	32	32	32	
Heat Exchanger In °F	119	117	110	102	100	100	
Heat Exchanger Out °F	48	50	50	50	50	50	
Reheater Out °F	48	54	54	52	52	56	
Suit In °F	55	54	54	52	52	52	
Suit Out °F	60	59	59	58	57	56	
Water Tank (Chiller) °F	32	31	30	30	30	30	
Water Saturation Tank °F	120	117	113	108	102	100	
Flowrate, Suit Ventilation cfm	2	2	2	2	2	2	
Dew Point, Suit In °F	37°	36.5	38	38	37	35	37
Dew Point, Suit Out °F	66	62	65	61 ▲64	65	68	
System Pressure in. Hg	3.9	3.9	3.9	3.9	3.9	3.9	
Suit Pressure in. H_2O	+.5	+ .5	+.5	.5	.5		
Humidity Controller (Trerice) °F	52	52	52	52	52	52	
Altitude							
O_2 Consumption (L/min)							
CO_2 Production (L/min)							
Pulse Rate							
Blood Pressure							
Respiration Rate							
Body Temperature							
Comfort Level							

Start of Test: 0950

10:25	38 DP In	62 DP Out
	75°DB In	100°F DB Out
10:37	37°DP In	64 DP Out
10:48	35°DP In	65 DP Out
10:52	37 DP In	68 DP Out

	Weight Before Test	Weight After Test
O_2 Bottle #1		
O_2 Bottle #2		
O_2 Bottle #3		

ALTITUDE EQUIPMENT DIVISION

CALCULATED
RECORDED
DRAWN
CHECKED
APPROVED

TEST DATA

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

SS-1018-R

Experiment No. 4

Test Subject Tom Dunne

Altitude

Test Date May 10, 1962

Time	9:23	9:39	10:00	10:20	10:55	11:20	11:30
Water [illegible]	31	30	30	32	34	34	32
[illegible] Water In	117	120	116	111	107	108	109
[illegible]	50	48	48	50	50	50	49
[illegible]	57	56	46	56	56	55	55
[illegible]	50	51	52	52	54	55	55
[illegible]	55	53	56	55	58	60	63
Water [illegible] Chiller	25	26	28	32	30	31	30
Water [illegible]ration Tank	120	122	118	112	107	110	110
Flow rate, [illegible] Ventilation [illegible]	2.0	3.6&2.0	&3.6	3.6&2.0	3.6&2.0	3.0&2.0	2.6&2.0
Dew Point, Suit In		35	34		20 & 20	27 & 30	37 & 40
Dew Point, Suit Out		62	54.5	32	25 & 25	40 & 42	47 & 55
System Pressure	3.8	2.7	2.7	2.4	2.4	2.6	3.0
Suit Pressure	21.75	9.25	9.15	9.05	14.1	16.	21.5
Humidity Controller [illegible]	54	54	54	54	54	54	54
Altitude							
O_2 Consumption (L/min)							
CO_2 Production (L/min)							
Pulse Rate							
Blood Pressure							
Respiration Rate							
[illegible] Temperature							
Comfort Level							

Start of Test: 9:39

Bottle #2 of O_2 used to 10,000 ft. Switch to #3 at 9:54
75° in tank at 2,500 feet
Hold at 10,000 for 10 min balance of 30 min. Start from S.L.
10:08 Start climb to 34,000 feet.
10:23 At 34,000 feet 45 min. from start of test
10:59 78° in tank
11:02 Descent
26,000 Harrington Pain in Knee
20,000 - Out
18,000 - Hold for D.P.
10,000 - Hold for D.P.
11:33 4,000 - 84°F

H_2O Pump has small flow thru it

	Weight Before Test	Weight After Test
O_2 Bottle #1		
O_2 Bottle #2		
O_2 Bottle #3		

ALTITUDE EQUIPMENT DIVISION
CALCULATED
RECORDED
DRAWN
CHECKED
APPROVED

TEST DATA

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

Experiment No. 5

Test Subject John V. Cuesta

Altitude

Pressure Suit

Suit Ventilation Rate

Dew Point Temperature

Suit Inlet Temperature

DATE May 10, 1962

Time	START	2:26	2:40	2:56	3:07	3:21	3:35	3:46
Water Cooling In °F		32	32	34	30	40	40	34
Heat Exchanger In °F		92	86	80	75	70	68	65
Heat Exchanger Out °F		49	50	50	49	50	50	48
Reservoir Out °F		52	56	53	55	56	56	54
Suit In °F		50	50	55	54	56	56	54
Suit Out °F		56	58	52	63	64	64	67
Water Tank (Chiller) °F		28	26	27	30	42	32	30
Water Sublimation Tank °F		94	87	92	78	70	68	98
Flowrate, Suit Ventilation cfm		2.0	2.0 2.0/4.2	2.0/4.6	2.0/4.6	2.0/4.6	2.0/4.6	2.0/4.0
Dew Point, Suit In °F		30	30	35.5	19	17	17	-
Dew Point, Suit Out °F		61	51.5	48	30	-	25	-
Water Pressure in. Hg		5.1	4.6	4.4	4.4	4.4	4.7	5.0
Dew Point Pressure Hg Abs.		SL	21.8 abs					
Humidity Controller (% RH)		52	53	53	53	53	53	53
Altitude Ft		4,000	10,000	22,500	31,000	*34,000	23,000	
O_2 Consumption (L/min)								
CO_2 Production (L/min)								
Pulse Rate								
Blood Pressure								
Respiration Rate								
Body Temperature								
Comfort Level								

*NOTE: John felt slight pain in right arm at 34,000
28,000 ft - arm better
24,000 ft - arm slight pain
21,000 ft - no pain
23,000 ft - 83°F in tank
43,000 ft - 79°F in tank
17,500 ft - 84°F in tank
14,000 ft - 85°F in tank
6,000 ft - 86°F in tank

	Weight Before Test, lb	Weight After Test
O_2 Bottle #1	2725	
O_2 Bottle #2	-	-
O_2 Bottle #3	9792 at 3:20	

79°F in tank

ALTITUDE EQUIPMENT DIVISION
CALCULATED
RECORDED
DRAWN
CHECKED
APPROVED

TEST DATA

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

Experiment No. 6
Test Subject Henry Cook
Altitude -
Treadmill Speed

Suit Ventilation Rate 2 cfm
Dew Point Temperature 50°
Suit Inlet Temperature 50°

DATE May 11, 1962
Bar. 29.85

Time	START	2:00	2:15	2:25	3:34
Water Cooling In		42	42	40	42
Heat Exchanger In		118	118	115	110
Heat Exchanger Out		50	48	49	46
Reheater Out		57	52	58	
Suit In		57	58	58	
Suit Out		60	58	58	
Water Tank (Chiller)		40	38	46	
Water Saturation Tank		122	118	115	
Flowrate, Suit Ventilation		2 cfm	3.4cfm	3.4	
Dew Point, Suit In					
Dew Point, Suit Out					
System Pressure		4.2"Hg	4.0	4.0	
Suit Pressure					
Humidity Controller (Trerice)		53	53		
Altitude		6K	10K		
O_2 Consumption (L/min)					
CO_2 Production (L/min)					
Pulse Rate					
Blood Pressure					
Respiration Rate					
Body Temperature					
Comfort Level					

Test aborted due to irregular electrocardiogram

	Weight Before Test	Weight After Test
O_2 Bottle #1	9665 Grams	
O_2 Bottle #2	-	
O_2 Bottle #3	2695 Grams	

ALTITUDE EQUIPMENT DIVISION
CALCULATED
RECORDED
DRAWN
CHECKED
APPROVED

TEST DATA

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

PRESSURE VENTILATION TEST

Experiment No. 7 | Suit Ventilation Rate 25 cfm | Bar. 29.84 | Date May 14, 1962

Test Subject Andre E. Kas | Dew Point Temperature 50°

Altitude 34,000 feet | Suit Inlet Temperature 50°

Treadmill Speed 2 mi/hr

START

Time	1:40	1:50	2:00	2:10	2:25	2:30	2:40	2:50	3:00	3:10	3:20	3:30	3:40	3:45	3:50	4:00
Water Cooling In °F	42°	40	40	38	Opened	42	40	42	41	42	42	42	46	47	46	46
Heat Exchanger In °F	97	92	91	94	H_2O to	98	94	94	90	92	92	93	94	94	94	94
Heat Exchanger Out °F	47	48	48	49	Suit	47	50	48	50	49	50	52	50	51	50	52
Repeater Out °F	53	51	52	54		52	51	50	52	52	51	54	51	54	54	54
Suit In °F	74	72	73	73		54	52	52	52	52	52	54	54	55	55	56
Suit Out °F	74	72	73	73		70	65	60	60	58	58	60	55	60	61	62
Water Tank (Chiller) °F	40°	36	40	40		41	38	40	38	40	44	42	45	48	45	46
Water Saturation Tank °F	95	94	95	96		100	93	94	92	94	92	96	96	96	96	96
Flowrate, Suit Ventilation cfm	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Dew Point, Suit In °F				45	-	40	38	-	14.7	17	16	16.2	16	16	-	-
Dew Point, Suit Out °F				79	-	62	52.5	-	30	29.2	29.4	42.5	70.5	67.5	60	-
System Pressure psia										3.5	3.5	3.5	34,000	3.5	3.5	
Dew Point Pressure Hg Abs				30.5		24	21.85		9.25	9.175	9.175	9.175	9.175	9.175	9.175	9.175
Humidity Controller (Cabin) °F										52	52	52	52	52	52	52
Altitude ft.										34K	34K	34K	34K	34K	34K	15.5K
O_2 Consumption (L/min)																
CO_2 Production (L/min)																
Pulse Rate																
Blood Pressure																
Respiration Rate																
Temperature																
Comfort Level																
Resp. Rate					12	12	15	12	15	15	15					
Body Temp. °F					98.6	98.8	98.8	98.6	98.4	98.6	98.6					
Pulse Rate					87	86	87	84	90	93	87					
Blood Pressure					110/78	118/74	116/74	114/74	104/64	115/6[illegible]	104/64					

Ventilation at 34°K = 2.5 on flowrator

	Weight Before Test, gm	Weight After Test, gm	
O_2 Bottle #1	9,710	9440.5	Used during treadmill
O_2 Bottle #2	-	-	
O_2 Bottle #3	2,722	2540.1	Used during basal mode

ALTITUDE EQUIPMENT DIVISION
CALCULATED
RECORDED
DRAWN
CHECKED
APPROVED

TEST DATA

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

Experiment No. #7 Continued
Test Subject Andre E. Kaz
Altitude
Treadmill Speed 2 mph

Suit Ventilation Rate 2 cfm
Dew Point Temperature 50°F
Suit Inlet Temperature 50°F

DATE May 14, 1962

Time	4:05	4:10
Water Cooling In	48	54
Heat Exchanger In	51	77
Heat Exchanger Out	54	78
Reheater Out	56	94
Suit In	54	94
Suit Out	65	78
Water Tank (Chiller)	54	76
Water Saturation Tank	56	108
Flowrate, Suit Ventilation	2	2
Dew Point, Suit In	-	18
Dew Point, Suit Out	-	29
System Pressure		
Dew Point Pressure Hg Absolute		30.5
Humidity Controller (Trerice)	52	52
Altitude	10K	SL
O_2 Consumption (L/min)		
CO_2 Production (L/min)		
Pulse Rate		
Blood Pressure		
Respiration Rate		
Body Temperature		
Comfort Level		

REMARKS

15.4 grams of H_2O in suit underwear after test

Treadmill on 3:24
off 3:45

	Weight Before Test	Weight After Test
O_2 Bottle #1		
O_2 Bottle #2		
O_2 Bottle #3		

ALTITUDE EQUIPMENT DIVISION
CALCULATED
RECORDED
DRAWN
CHECKED
APPROVED

TEST DATA

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

Experiment No. 8
Test Subject Dick Betts
Altitude
Treadmill Speed 2 mph

Suit Ventilation Rate 2 cfm
Dew Point Temperature 50°F
Suit Inlet Temperature 50°F

DATE May 15, 1962
BAR 29.87

Time	9:47	10:37	10:47	11:07	11:17	11:27	11:47	11:57	12:07
									SL
Water Cooling In °F	48	52	48	45	45	45	46	48	46
Heat Exchanger In	114	114	112	100	100	100	100	99	100
Heat Exchanger Out °F	52	57	53	50	50	50	50	52	51
Reheater Out °F	61	58	58	55	54	54	55	54	56
Suit In	61	59	58	56	56	56	56	56	56
Suit Out	73	62	60	59	57	59	59	62	64
Water Tank (Chiller) °F	47	52	48	47	45	45	46	48	47
Water Saturation Tank °F	118	116	115	102	102	102	102	101	102
Flowrate, Suit Ventilation (cfm)	2	2/3.0	2/3.6	2/5.2	2/5.2	2/5.2	2/5.2	1.6	1.0
Dew Point, Suit In °F	45	37	-	11.5	11.5	10.5	12	-	41
Dew Point, Suit Out °F 10:21	62	55	-	30.0	37	55	44.5	-	60
System Pressure "Hg A	6.3	5.4	5.4	5.4	5.4	5.4	5.4	5.4	6.4
Dew Point Pressure Hg Abs		21.35	-	8.8	8.4	8.5	8.5	-	SL
Humidity Controller (Trerice) °F	50	50	50	50	50	52	52	52	52
Altitude Ft	0	10,000	21,000	34,000	34,000	34,000	34,000	10K'	SL
O_2 Consumption (L/min)									
CO_2 Production (L/min)									
Pulse Rate	66	75	63	93	84	90	72	69	72
Blood Pressure	118/80	122/92	120/90	118/92	138/72	154/92	150/82	152/100	124/82
Respiration Rate		12			28	25	12	12	
Body Temperature									
Comfort Level									

Treadmill on 11:17 off 11:37

Test started with temp recorder due to malfunction of recorder
In operation again at 10,000 ft.

	Weight Before Test, gm	Weight After Test, gm
O_2 Bottle #1	9737.0 G	7532.0
O_2 Bottle #2	-	-
O_2 Bottle #3	2717.5 G	2485.0

ALTITUDE EQUIPMENT DIVISION
CALCULATED
RECORDED
DRAWN
CHECKED
APPROVED

TEST DATA

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

Experiment No. 9
Test Subject James Allyson
Altitude Feet
Treadmill Speed 2 mph

Suit Ventilation Rate 2 cfm
Dew Point Temperature 50°F
Suit Inlet Temperature 50°F

DATE May 15, 1962

Time	1:57	2:11	2:17	2:34	2:47	2:58	3:10	3:30	3:40	3:45	3:54	3:58
Water Cooling In °F	46	48	50	50	49	50	50	46	47	48	48	
Heat Exchanger In °F	96	92	90	80	80	86	91	97	97	98	95	
Heat Exchanger Out °F	52	52	54	52	52	50	52	50	50	51	51	
Reheater Out °F	60	56	55	54	53	53	54	53	53	53	53	
Suit In °F	60	57	60	56	56	55	55	55	55	55	55	
Suit Out °F	62	61	61	62	58	58	59	59	59	60	62	
Water Tank (Chiller) °F	46	49	52	49	49	50	50	47	48	48	48	
Water Saturation Tank °F	98	97	90	82	83	88	95	99	99	98	97	
Flowrate, Suit Ventilation (cfm)	2.0	2.0/3.2	2.0/4.2	2.0/4.6	2.0/6.2	2/6.2	2/6.2	2/6.8	2/6.0	2.0/5.	2.0/3.0	
Dew Point, Suit In °F	-	42	39	36.5	-	17	17.5	16.0	-	-		41
Dew Point, Suit Out °F	-	66	54	51.5	-	37	36.0	58.5	-	-		65
System Pressure ("Hg)	1.5	1.5	1.8	1.7	1.4	1.4	1.4	1.4	1.5	1.5	3.0	
Dew Point Pressure Hg Abs	-	-	22	22	-	10.1	9.6	9.7	-	-		SL
Humidity Controller (Trerice) °F	50	50	50	50	50	50	50	50	50	50	50	
Altitude Feet	0	6,000	10,000	12,000	34,000	34,000	34,000	34,000	30,000	18,000	2,000	
O_2 Consumption (L/min)												
CO_2 Production (L/min)												
Pulse Rate Beats/Min		78	72	75	75	78	72	81	84	78		
Blood Pressure		118/84	124/78	128/84	118/78	120/78	132/70	138/72	118/70	120/78		
Respiration Rate Resp/Min	Sensor Inoperative											
Body Temperature °F	Probe came out											
Comfort Level												

Treadmill On 3:15
Off 3:35

	Weight Before Test, gm	Weight After Test, gm
O_2 Bottle #1	9716.0	9261.0
O_2 Bottle #2	-	-
O_2 Bottle #3	2714.0	Leak in Helmet

ALTITUDE EQUIPMENT DIVISION
CALCULATED
RECORDED
DRAWN
CHECKED
APPROVED

TEST DATA

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

Experiment No. 10
Test Subject Russell Weber
Altitude
Treadmill Speed 2 mph

Suit Ventilation Rate 2 cfm
Dew Point Temperature 50°F
Suit Inlet Temperature 50°F

May 16, 1962

Time	10:33	10:43	11:00	11:10	11:18	11:37	11:46	12:00
Water Cooling In °F	48	47	45	47	46	46	46	
Heat Exchanger In °F	112	102	87	80	80	83	85	
Heat Exchanger Out °F	52	50	48	49	49	49	49	
Reheater Out °F	58	53	50	50	52	52	52	
Suit In °F	58	55	54	53	54	54	54	
Suit Out °F	60	59	58	59	60	60	60	
Water Tank (Chiller) °F	51	47	45	47	48	46	46	
Water Saturation Tank °F	116	102	87	80	81	84	92	
Flowrate, Suit Ventilation (cfm)	2.0	2.0	2.0/9.6	5.2	6.0	6.0	4.2	
Dew Point, Suit In °F	45	42.5	-	27.5	28	31	-	48.5
Dew Point, Suit Out °F	59	53.5	-	35	44.5	50	-	63
System Pressure ("Hg Abs)	29.5	27.5	25.5	22.0	21.9	21.9	22.6	
Dew Point Pressure "Hg. Abs.	25.6	22.9	-	10.2	10.2	10.2	-	30.5
Humidity Controller (Trerice) °F	50	50	50	50	50	50	50	
Altitude Ft.	4,000	10,000	23,000	33,000	34,000	34,000	20,000	
O_2 Consumption (L/min)								
CO_2 Production (L/min)								
Pulse Rate								
Blood Pressure								
Respiration Rate								
Body Temperature								
Comfort Level								

The subject was placed on the treadmill at 11:17 and was taken off at 11:35

	Weight Before Test, gm	Weight After Test, gm
O_2 Bottle #1	9740.0	9520.0
O_2 Bottle #2	-	-
O_2 Bottle #3	2737.0	2632.5

Underwear After 394.0
Underwear Before [illegible]

ALTITUDE EQUIPMENT DIVISION
CALCULATED
RECORDED
DRAWN
CHECKED
APPROVED

TEST DATA

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

Experiment No. 11
Test Subject David Vogl
Altitude 34,000 ft.
Treadmill Speed 2 mph

Suit Ventilation Rate 2 cfm
Dew Point Temperature 50°F
Suit Inlet Temperature 50°F

May 16, 1962

Time		1:27	1:47	2:00	2:21	2:36	2:50
Water Cooling In	°F	46	48	49	50	52	50
Heat Exchanger In	°F	122	117	108	100	97	97
Heat Exchanger Out	°F	62	60	62	63	60	60
Reheater Out	°F	63	63	65	63	62	62
Suit In	°F	62	63	65	63	62	62
Suit Out	°F	63	63	65	63	62	62
Water Tank (Chiller)	°F	46	48	49	50	49	47
Water Saturation Tank	°F	125	119	108	111	98	99
Flowrate, Suit Ventilation	cfm	2.0	2.0	4.0	4.8	4.8	4.8
Dew Point, Suit In	°F	-	49	48	-	28	27
Dew Point, Suit Out	°F	-	72	63.5	-	42	-
System Pressure	" Hg Abs	31.5	29.5	31.5	25.0	23.3	23.3
Dew Point Pressure	" Hg Abs.	-	30.5	21.65	-	8.7	44
Humidity Controller (Trerice)	°F	62	62	60	60	60	60
Altitude	Feet	0	1,000	10,000	23,000	34,000	34,000
O_2 Consumption (L/min)							
CO_2 Production (L/min)							
Pulse Rate							
Blood Pressure							
Respiration Rate							
Body Temperature							
Comfort Level							

Test aborted due to a faulty oxygen connector

	Weight Before Test, gm	Weight After Test, gm
O_2 Bottle #1	9736.5	
O_2 Bottle #2	-	-
O_2 Bottle #3	2739.0	

ALTITUDE EQUIPMENT DIVISION
CALCULATED
RECORDED
DRAWN
CHECKED
APPROVED

TEST DATA

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

Experiment No. 12
Test Subject Dick Betts
Altitude 34 K'
Treadmill Speed 2 mph

Suit Ventilation Rate 2 acfm
Dew Point Temperature 50°F
Suit Inlet Temperature 50°F.

DATE May 22, 1962
BAR

START

Heat Exchanger installed in tank

Time	10:28	10:41	10:54	11:10	11:20						
Water Cooling In °F	44	52	60	37	34						
Heat Exchanger In °F	104	105	104	102	103						
Heat Exchanger Out °F	51	47	55	44	46						
Reheater Out °F	77	77	79	63	64						
Suit In °F	51	47	55	44	64						
Suit Out °F	71	70	70	63	64						
Water Tank (Chiller) °F	42	43	42	32	31						
Water Saturation Tank °F	107	108	108	106	110						
Flowrate, Suit Ventilation (cfm)	2.0	2.0	2.0	2.0	2.0						
Dew Point, Suit In °F	-	-	-	-	-						
Dew Point, Suit Out °F	-	-	-	-	-						
System Pressure "Hg Abs.	31.5	29.0	23.0	25.5	25.0						
Suit Pressure "Hg Abs.	-	-	-	-	-						
Humidity Controller (Device)	-	-	-	-	-						
Altitude Ft	0	4,500	16,000	34,000	34,000						
TIME	10:46	10:51	10:57	11:03	11:08	11:13	11:19	11:25	11:30	11:35	11:40
O_2 Consumption (L/min)											
CO_2 Production (L/min)											
Pulse Rate Beats/Min	66	66	63	63	60	69	60	69	66	66	63
Blood Pressure	130/80	125/82	128/84	122/86	135/80	125/75	120/72	128/84	122/75	128/74	122/75
Respiration Rate /Min	9	10	12	12	15	12	15	18	12		12
Body Temperature °F	98.8	98.8	98.8	98.8	98.8	98.8	98.8	98	98.8	98.8	98
Comfort Level											

10:35 On O_2 Bottle #2 PA = 410 PB = 65/72 PC = 450
11:10 Change to Bottle #3 (O_2) PA = [illegible] PB = 57/64 PC = 460
11:19 Subject on portable O_2 to adjust helmet
11:20 Subject back to suit O_2
11:21 Refill O_2 Bottle #2
11:41 Off O_2 at 10 K
No Dew Points taken - plugged line

	Weight Before Test, gm	Weight After Test, gm
O_2 Bottle #1	9,725	
O_2 Bottle #2	5,015	
O_2 Bottle #3	2,739	

ALTITUDE EQUIPMENT DIVISION		
CALCULATED		
RECORDED		
DRAWN		
CHECKED		
APPROVED		

TEST DATA

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

Experiment No. 13
Test Subject John Cuesta
Altitude 34,000 ft
Treadmill Speed 2 mph

Suit Ventilation Rate 2 cfm
Dew Point Temperature 50°F
Suit Inlet Temperature 50± 50°F

DA May 22, 1962

Time	1:42	2:00	2:20	2:30	2:42	2:56	3:07	3:25						
Water Cooling In (°F)	100	100	95	92	89	90	87	76						
Heat Exchanger In (°F)	116	110	99	97	92	90	87	76						
Heat Exchanger Out (°F)	50	52	50	48	48	50	52	55						
Reheater Out (°F)	109	96	97	95	92	90	88	76						
Suit In (°F)	50	52	50	48	49	50	52	55						
Suit Out (°F)	74	74	70	68	68	65	55	75						
Water Tank (Chiller) (°F)	32	37	42	40	40	42	43	44						
Water Saturation Tank (°F)	117	100	99	97	85	84	85	81						
Flowrate, Suit Ventilation cfm	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0						
Dew Point, Suit In °F	-	52	46	42	41	42	44	49.5						
Dew Point, Suit Out °F	-	68	67.5	61	59	73	76	82						
System Pressure "Hg Abs.	32.5	24.3	23.9	24.8	25.0	25.0	25.0	32.5						
Suit Pressure "Hg Abs.	-	-	-	-	-	-	-	-						
Humidity Controller (Trerice)	-	-	-	-	-	-	-	-						
Altitude Ft	0	10,000	13,000	34,000	34,000	34,000	34,000	0						
Dew Point Pressure " Hg Abs.		20.5	20.5	7.3	7.3	7.3	7.3	SL						
TIME	1:58	2:05	2:10	2:15	2:20	2:25	2:30	2:35	2:40	2:45	2:50	2:55	3:05	3:19
O_2 Consumption (L/min)														
CO_2 Production (L/min)														
Pulse Rate Beats/Min	75	69	72	69	66	75	72	78	75	81	105	114	54	
Blood Pressure	120/84	138/82	150/72	130/80	130/75	135/75	120/75	128/68	128/75	138/92			104/54	132/68
Respiration Rate /Min	7	7	7	7	9	9	9	12	12	12	9	18	12	7
Body Temperature °F	99.7	99.7	99.7	99.6+	99.6	99.3+	99.3	99.3	99.4	99.2	99.4	99.3+		99.3
Comfort Level														

1:47 On O_2 Bottle #2 TA = 450 TB = 66/74 TC = 450
2:46 Change to Bottle #1 TA = 850 TB = 55/64 TC = 450
2:46 Treadmill start
3:07 Treadmill off - changed to Bottle #3 (O_2)
2:50 - 2:58 Fill Bottle #2

H_2O Collected at H_2O trap outlet from inside HEX (at suit inlet): H_2O at end of run = 140 cc

Note: 81 grams of H_2O in underwear after test

	Weight Before Test, gm	Weight After Test, gm
O_2 Bottle #1	9,725	9,554
O_2 Bottle #2	-	
O_2 Bottle #3	2,723	2,571

ALTITUDE EQUIPMENT DIVISION
CALCULATED
RECORDED
DRAWN
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APPROVED

TEST DATA

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

May 22, 1962

RUN #13

TIME	DEW POINT °F IN	DEW POINT °F OUT	PRESS. ABS. "Hg Abs.	DRY TEMP °F IN	DRY TEMP °F OUT
2:02	52	68	20.5	70	89
2:07	45	69	20.5	70	90
2:13	46	69.5	20.5	72	90
2:17	46	67.5	20.5	72	91
2:28	42	61	7.3	71	89
2:40	41	59	7.3	75	90
2:45	45	61	7.3	75	90
2:48	42	63.5	7.3	76	91
2:50	40	71	7.3	77	92
2:53	39	72	7.3	77	92
2:55	42	73		77	93
2:58	42	74.5		78	93
3:00	45.5	75		78	93
3:03	44.5	75.5		80	93
3:06	44	76		80	93
3:08	43	74	7.3		
3:22	49.5	82	SL	83	95

TEST DATA

PRESSURE VENTILATION TEST

Experiment No. 14
Test Subject Russell Weber
Altitude 34,000 ft
Treadmill Speed 2 mph

Suit Ventilation Rate 2 cfm
Dew Point Temperature 50° F
Suit Inlet Temperature 50° F

Bar 29.85

Date May 25, 1962

START — TREADMILL

Time	10:04	10:33	10:39	10:53	11:01	11:20	11:30	11:40	11:50	12:00
Water Cooling In (°F)	87	88	88	90	91	92	95	98	103	107
Heat Exchanger In (°F)	94	96	98	100	101	107	114	119	123	125
Heat Exchanger Out (°F)	50	49	50	50	50	52	51	52	52	54
Reheater Out (°F)	92	95	94	91	96	98	100	104	112	120
Suit In (°F)	50	49	50	50	50	52	51	51	52	54
Suit Out (°F)	70	70	68	70	71	68	66	68	70	72
Water Tank (Chiller) (°F)	44	44	45	45	47	48	48	46	47	49
Water Saturation Tank (°F)	95	99	99	102	104	111	114	122	126	126
Flowrate, Suit Ventilation (cfm)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Dew Point, Suit In °F			45	46.5	42	41.5	42	42	41	48.5
Dew Point, Suit Out °F			70	70	69	60	68	69.5	70	77
System Pressure ("Hg A)	32.3	32.5	32.3	32.0	24.4	24.4	24.4	24.4	24.4	30.5
Suit Pressure ("Hg A)										
Humidity Controller (Device) Not Used	-	-	-	-	-	-	-	-	-	-
Altitude Ft	0	4,000	10,000	17,000	34,000	34,000	34,000	34,000	27,000	0

TREADMILL

TIME	10:33	10:40	10:45	10:50	10:55	11:00	11:05	11:10	11:15	11:20	11:26	11:30	11:35	11:40	11:49
O_2 Consumption (L/min)															
CO_2 Production (L/min)	80	72	80	72	81	90	96	90	90	90		117	126	122	105
Pulse Rate Beat/Min	122/78	120/80	122/72	120/75	122/76	138/82	132/92	124/78	122/75	125/82			158/68		135/68
Blood Pressure	9	6	9	9	8	12	12	12	12	9		15	21	24	15
Respiration Rate Insp/Min	99	99+	99+	99+	99	99+	99	98.8	98.8	98.8		99	99.5	99.4	99.6
Body Temperature °F															
Comfort Level															

	11:55	12:01	Start on O_2 bottle #2	10:22
P	99	91	Changed O_2 bottle from #2 to #3	10:58
BP	120/72	124/70	Bottle #2 Empty at 11:17	
R	12	12	Switched to O_2 bottle #1 from #3	11:26
T	99	998	Switched O_2 bottles from #1 to #2	

	Weight Before Test, gm	Weight After Test, gm
O_2 Bottle #1	9798	9519
O_2 Bottle #2	-	-
O_2 Bottle #3	2766	2591
	-	

ALTITUDE EQUIPMENT DIVISION
CALCULATED
RECORDED
DRAWN
CHECKED
APPROVED

TEST DATA

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

SS-1018

Date May 29, 1, 1962

RUN NUMBER 17

TIME	DEW POINT °F IN	DEW POINT °F OUT	PRESS. ABS. "Hg A	SUIT TEMP °F IN	SUIT TEMP °F OUT
2:55	50	75.5	30.3	56	90
3:04	48	69	21.0		
3:09	49	67.5	21.5	53	88
3:17	48.5	65	21.1	52	89
3:20	49	66	21.0	52	89
3:30	46	59	8.0	52	87
3:35	47.5	60.5			
3:40	45	59	7.8	53	88
3:50	45	59	7.8	52	89
3:55	43.5	69			
4:00	44.5	74	7.9	52	91
4:05	44.5	76.2	7.9	52	91
4:10	45.0	77.5	8.0	53	91
4:15	44.5	77.8	7.9	53	91
4:20	44.5	78.5	8.05	53	90
4:25	44.0	78.0	8.0	54	89
4:30	44.5	77.5	8.0	54	89

TEST DATA

May 25, 1962

RUN NUMBER 14

TIME	DEW POINT °F IN	DEW POINT °F OUT	PRESS. ABS. "Hg Abs	DRY TEMP. °F IN	DRY TEMP. °F OUT
10:40	45	70	20.75	70	90
10:43	45.5	70	20.75	70	90
10:46	46	70	20.8	72	90
10:50	46.5	70	20.8	72	91
11:00	42	68	7.5	71	90
11:03	42	69	7.5	71	90
11:06	42	67.5	7.5	74	90
11:10	41	66	7.4	75	90
11:13	41	64.5	7.4	77	90
11:16	41.5	62	7.5	77	91
11:19	41.5	60	7.5	77	93
11:22	41.5	57.5	7.5	78	92
11:25	41	58	7.5	79	92
11:29	41	66	7.5	78	92
11:30	42	68	7.5	78	92
11:32	42.5	68.5	7.5	79	92
11:34	42	68	7.5	80	92
11:36	42	68.5	7.5	81	92
11:38	42.	69	7.5	82	93
11:41	42	69.5	7.5	83	93
11:43	41	69.5	7.5	84	93
11:45	41	70	7.5	83	93
11:47	41.5	70	7.5	83	83
11:49	41	70	7.5	84	92
12:02	48.5	77	30.0	82	95

Experiment No. 15
Test Subject Andy Kaz
Altitude 34,000 ft
Treadmill Speed 2 mph

Suit Ventilation Rate 2 cfm
Dew Point Temperature 50°F °C
Suit Inlet Temperature 50°F °C

Bar 29.87 "Hg A

May 25, 1962

START

Time	1:59	2:05	2:10	2:15	2:20	2:25	2:30	2:35	2:40	2:43	2:50	2:55	3:00	3:05	3:10	3:15
Water Cooling In (°F)	100	98	100	98	98	97	97	98	97	97	97	97	97	97	98	99
Heat Exchanger In (°F)	112	112	110	110	110	109	107	106	107	110	110	112	112	113	114	115
Heat Exchanger Out (°F)	54	54	53	51	51	50	50	50	50	52	52	51	51	51	52	51
Reheater Out (°F)	108	107	107	107	106	106	106	105	102	102	102	98	98	104	105	106
Suit In (°F)	54	54	53	51	51	50	50	50	50	52	52	51	51	51	52	51
Suit Out (°F)	72	70	71	70	70	69	69	68	69	68	68	68	68	68	68	66
Water Temp (Chiller) (°F)	50	50	49	48	47	48	47	48	48	48	48	47	47	48	46	46
Water Saturation Tank (°F)	114	114	111	110	110	110	108	108	110	112	112	114	114	115	115	116
Flowrate, Suit Ventilation (cfm)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.
Dew Point, Suit In °F											37	41.5	41.5	40.5	42.5	43
Dew Point, Suit Out °F											71	75	75	70.5	70.5	73
Cabin Pressure ("Hg A)	34.0	33.0	23.0	23.6	23.6	22.3	24.6	24.6	24.6	24.6	24.6	24.6	24.6	24.6	24.6	24.
Suit Pressure /Cabin ("H_2O)	1.0	2.3	1.3	1.3	1.3	4.0	3.0	3.5	2.7	4.0	4.0	2.0	2.0	2.8	3.0	3.0to
Humidity Controller (Setting) Not Used	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Altitude Ft	SL	6,000	10,000	10K'	10K'	21K'	34K'	34K'	34K'	34K'	34K'	34K'	34K'	34K'	34K'	34K
O_2 Consumption (L/min)																
CO_2 Production (L/min)																
Pulse Rate																
Blood Pressure																
Respiration Rate																
Rectal Temperature																
Comfort Level																

	Weight Before Test, gm	Weight After Test, gm
O_2 Bottle #1	9760	
O_2 Bottle #2	-	
O_2 Bottle #3	2725	

ALTITUDE EQUIPMENT DIVISION
CALCULATED
RECORDED
DRAWN
CHECKED
APPROVED

TEST DATA

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

Experiment No. 15 (Continued)
Test Subject Andy Kaz
Altitude 34,000 ft
Treadmill Speed 2 mph

Suit Ventilation Rate 2cfm
Dew Point Temperature 50° F
Suit Inlet Temperature 50° F

Time		3:20	3:25	3:30	3:35	3:40	3:48
Water Cooling In	°F	99	99	100	100	100	
Heat Exchanger In	°F	117	117	118	118	117	
Heat Exchanger Out	°F	51	51	52	52	53	
Reheater Out	°F	106	106	106	106	108	
Suit In	°F	51	51	52	52	53	
Suit Out	°F	68	68	68	68	68	
Water Tank (Chiller)	°F	48	48	47	47	46	
Water Saturation Tank	°F	116	116	117	111	114	
Flowrate, Suit Ventilation	(cfm)	2.0	2.0	2.0	2.0	2.0	
Dew Point, Suit In	°F	45	45.5	44.5	44.5		45
Dew Point, Suit Out	°F	73	73	70.5	73.5		79
System Pressure	("Hg A)	24.6	24.6	24.6	24.6	24.6	
Suit Pressure	"H_2O	3.0to4.0	3.0-4.0	3 to 4	3.7	3.3	
Humidity Controller (Trerice)	Not Used						
Altitude	Ft	34K'	34K'	34K8	34K'	16K'	S.L.
O_2 Consumption (L/min)							
CO_2 Production (L/min)							
Pulse Rate							
Blood Pressure							
Respiration Rate							
Body Temperature							
Comfort Level							

	Weight Before Test	Weight After Test
O_2 Bottle #1		
O_2 Bottle #2		
O_2 Bottle #3		

ALTITUDE EQUIPMENT DIVISION
CALCULATED
RECORDED
DRAWN
CHECKED
APPROVED

TEST DATA

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

May 25, 1962

RUN NUMBER 15

	TIME	DEW POINT °F IN	DEW POINT °F OUT	PRESS. ABS. "Hg Abs.	DRY TEMP °F IN	DRY TEMP °F OUT
	2:15	54		20.67	71	
	2:35	10	66	7.49	69	90
	2:41	13	70	7.48	73	91
AP OFF	2:50	37	71.5	7.52	74	92
	3:00	41.5	75	7.55	75	92
	3:09	40.5	70.5	7.55	77	85
	3:13	42.5	70.5	7.55		
	3:15	43	73	7.55	78	94
	3:19	45	73	7.55	78	95
	3:23	45	74	7.55	79	94
	3:26	45.5	73	7.55	79	94
	3:29	44.5	70.5		79	93
	3:31	44.5	73.5		79	93
	3:48	45	79		82	96

TEST DATA

PRESSURE VENTILATION TEST

Experiment No. 16
Test Subject Tom Dunne
Altitude 34,000 ft
Treadmill Speed 2 mph

Suit Ventilation Rate 4 cfm
Dew Point Temperature 50°F
Suit Inlet Temperature 50°F

DATE May 28, 1962
BAR 29.88

START

Time	9:53	10:00	10:05	10:10	10:15	10:20	10:25	10:30	10:35	10:40	10:45	10:50	11:00	11:05	11:10	11:15
Water Cooling In (N/A)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Heat Exchanger In (Tank)	76	78	78	78	80	81	84	85	85	85	97	100	100	100	100	101
Heat Exchanger Out	49	50	50	50	50	50	50	50	50	50	49	50	50	51	50	49
Reheater Out	76	78	79	79	80	81	84	85	85	85	97	100	100	100	100	101
Suit In Attached Sheet °F																
Suit Out Attached Sheet																
Water Tank (Chiller)	46	47	47	49	46	46	48	46	48	48	47	48	48	47	48	48
Water Saturation Tank	80	82	82	82	84	87	90	92	97	97	102	104	104	104	104	104
Flowrate, Suit Ventilation (cfm)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.
Dew Point, Suit In °F			47	46.5	44.5	45			50	49						
Dew Point, Suit Out °F			80.5	80.5	81.5	82		92.5	83							
System Pressure ("Hg A)	35.0	30.0	30.0	30.0	29.[illegible]	23.4	23.4	23.4	23.4	23.4	23.4	23.40	23.4	23.4	23.4	23.
Suit Pressure /Cabin ("H_2O)	4.0-5.3	3.8-4.8	3.8-4.5	3.5-4.5	6.8-8.0	6.6-7.3	6.5-7.0	6.5-7.0	6.8-7.3	6.8-7.3	7.2-8.0	6.5-7.0	6.5-7.0	9.5-13.0	7.0-8.0	7.0-8.
Humidity Controller (Trerice) Not Used	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Altitude Ft.	6K'	10K'	10K'	10K'	19K'	34K'	34K'	34K'	34K'	34K'	34K'	34K'	34K'	34K'	34K'	34K'
O_2 Consumption (L/min)																
CO_2 Production (L/min)																
Pulse Rate																
Blood Pressure																
Respiration Rate																
Body Temperature																
Comfort Level																

	Weight Before Test, gm	Weight After Test, gm
O_2 Bottle #1	9767	9510
O_2 Bottle #2	-	-
O_2 Bottle #3	2739	2497
Linen	391	412

ALTITUDE EQUIPMENT DIVISION
CALCULATED
RECORDED
DRAWN
CHECKED
APPROVED

TEST DATA

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

SS-1018-R

Experiment No. 16 (Continued)
Test Subject Tom Dunne
Altitude 34,000 Ft
Treadmill Speed 2 mph

Suit Ventilation Rate 4 cfm
Dew Point Temperature 50°F
Suit Inlet Temperature 50°F

May 29, 1962
BAR 29.88 "Hg A

Treadmill

Time	11:20	11:25	11:30	11:35	11:40	11:45	11:50	11:55	12:00
Water Cooling In N/A	-	-	-	-	-	-	-	-	-
Heat Exchanger In Tank	100	100	100	100	100	100	102	102	100
Heat Exchanger Out	50	50	50	50	51	49	51	51	51
Reheater Out °F	100	100	100	100	100	100	102	102	100
Suit In Attached Sheet									
Suit Out Attached Sheet									
Water Tank (Chiller)	47	48	46	47	47	47	48	48	46
Water Saturation Tank	105	104	104	104	104	100	107	106	103
Flowrate, Suit Ventilation (cfm)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Dew Point, Suit In °F									
Dew Point, Suit Out °F									
System Pressure ("Hg A)	23.4	23.4	23.4	23.4	23.4	23.4	23.4	23.1	25.1
Suit Pressure /Cabin ("H_2O)	8.0-8.5	7.8-9.1	8.0-9.1	8.3-9.3	8.3-9.3	9.0	7.3	4.3-5.0	0.4
Humidity Controller (Trerice) Not Used									
Altitude Ft	34K'	34K'	34K'	34K'	34K'	34K'	27K'	14K'	8K'
O_2 Consumption (L/min)									
CO_2 Production (L/min)									
Pulse Rate									
Blood Pressure									
Respiration Rate									
Body Temperature									
Comfort Level									

	Weight Before Test	Weight After Test
O_2 Bottle #1		
O_2 Bottle #2		
O_2 Bottle #3		

ALTITUDE EQUIPMENT DIVISION
CALCULATED
RECORDED
DRAWN
CHECKED
APPROVED

TEST DATA

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

May 28, 1962

RUN NUMBER 16

TIME	DEW POINT °F IN	DEW POINT °F OUT	PRESS. ABS. "Hg	SUIT TEMP °F IN	SUIT TEMP °F OUT
11:06	47	80.5	7.6	65	90
11:08	46.5	80.5	7.6	66	90
11:15	44.5	81.5	7.6	67	90
11:18	45	82	6.7	68	91
11:21	46	81	6.75	68	91
	47	89		69	90
11:34	50	82		70	90
11:38	49	83		71	90
11:46	49	80			

TEST DATA

PRESSURE VENTILATION TEST

Experiment No. 17
Test Subject Richard Betts
Altitude 34,000 ft
Treadmill Speed 2 mph

Suit Ventilation Rate 4 cfm
Dew Point Temperature 50°F
Suit Inlet Temperature 50°F

DATE May 29, 1962
BAR 29.85 "Hg A

TREADMILL

Time	3:00	3:05	3:10	3:15	3:20	3:25	3:30	3:35	3:40	3:45	3:50	3:55	4:00	4:05	4:10	4:15
Water Cooling In N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Heat Exchanger In (°F)	81	82	82	82	82	80	81	64	63	62	61	62	64	64	64	65
Heat Exchanger Out (°F)	52	51	51	52	52	51	51	50	50	49	50	50	50	50	50	50
Reheater Out (°F)	81	82	82	82	82	82	82	82	82	82	82	84	85	85	86	87
Suit In (°F)	52*	51*	51*	52	52	51	52	52	51	51	52	52	54	53	52	52
Suit Out (°F)	81*	81*	82*	82*	90	86	87	88	88	89	90	91	91	90	90	91
Water Tank (Chiller) (°F)	48	48	48	48	46	47	48	48	46	49	47	46	47	47	48	48
Water Saturation Tank (°F)	86	86	87	84	84	83	84	85	88	86	88	90	90	90	90	91
Flowrate, Suit Ventilation (cfm)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Dew Point, Suit In (°F)	50.0	48	49	48.5	49	-	46	47.5	45	45	43.5	43.5	44.5	44.5	45	44.5
Dew Point, Suit Out (°F)	75.0	69	67.5	65	66.0	-	59	60.5	59	59	59	69	74	76.2	76.2	77.8
System Pressure ("Hg A)	23.5	23.5	23.3	23.3	23.5	23.4	23.1	23.1	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5
Suit Pressure ("H_2O)	5.0-6.0	5.7-8.0	6.0-7.5	6.0-7.5	6.0-7.5	10.0-11.0	10.0-11.0	/10.0-10.5	/8.8-9.3	/9.5-10.0	/9.5-10.0	/10.0-12.0	/11.0-12.0	/11.0-12.5	12.0-13.0	12.0-13
Humidity Controller (Positive) Not Used	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Altitude Ft	10,000	10,000	10,000	10,000	12K'	34K'	34K'	34K'	34K'	34K'	34K'	34K'	34K'	34K'	34K'	34K'
TIME	3:02	3:08	3:33	3:40	4:09	4:28	4:31	4:32	4:32							
Tank Temp (°F)	77	75	76	77	79	87(12K')	91(4K')	92(2K')	93 500							
O_2 Consumption (L/min)																
CO_2 Production (L/min)																
Pulse Rate																
Blood Pressure																
Respiration Rate																
Body Temperature																
Comfort Level																

*NOTE : These figures represent temperature in solid duct. They do not relate to suit temperature (18).

	Weight Before Test, gm	Weight After Test, gm
O_2 Bottle #1	9805	
O_2 Bottle #2	-	
O_2 Bottle #3	2742	
Linen	393	

ALTITUDE EQUIPMENT DIVISION
CALCULATED
RECORDED
DRAWN
CHECKED
APPROVED

TEST DATA

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

SS-1018-R

Experiment No. 17
Test Subject Dick Betts
Altitude 34K'
Treadmill Speed 2 mph

Suit Ventilation Rate 4 cfm
Dew Point Temperature 50°F
Suit Inlet Temperature 50°F

May 29, 1962

Time		4:20	4:25
Water Cooling In	N/A	-	-
Heat Exchanger In	°F	69	70
Heat Exchanger Out	°F	51	51
Reheater Out	°F	87	88
Suit In	°F	54	53
Suit Out	°F	91	91
Water Tank (Chiller)	°F	46	48
Water Saturation Tank	°F	92	92
Flowrate, Suit Ventilation	cfm	4.0	4.0
Dew Point, Suit In	°F	44.5	44.5
Dew Point, Suit Out	°F	78.5	77.5
System Pressure	"HgA	23.5	23.5
Suit Pressure	"H_2O	10.0	9.0
Humidity Controller (Position)	N/A	-	-
Altitude	Ft	34K'	34K'
O_2 Consumption (L/min)			
CO_2 Production (L/min)			
Pulse Rate			
Blood Pressure			
Respiration Rate			
Body Temperature			
Comfort Level			

	Weight Before Test	Weight After Test
O_2 Bottle #1		
O_2 Bottle #2		
O_2 Bottle #3		

ALTITUDE EQUIPMENT DIVISION
CALCULATED
RECORDED
DRAWN
CHECKED
APPROVED

TEST DATA

A RESEARCH MANUFACTURING CO
LOS ANGELES CALIFORNIA

Date May 31, 1963

RUN NUMBER 18

TIME	DEW POINT °F IN	DEW POINT °F OUT	PRESS. ABS. "Hg A	SUIT TEMP °F IN	SUIT TEMP °F OUT
9:47	49	59	21.1	52	86
9:53	49	59	21.1	52	86
9:57	49	58	21.1	52	88
10:02	48	57.5	21.15	52	87
10:05	47	57	21.2	52	88
10:10	46.5	56.5	21.2	52	88
10:20	44	54	7.9	50	86
10:25	45	53	7.8	50	86
10:30	44	54	7.8	52	86
10:35	46.5	54	8.0	52	88
10:40	45	52.5	7.95	51	89
10:45	45	53.5	7.9	51.	89
10:50	46	59.5	7.9	53	88
10:55	47	67	8.0	52	90
11:00	46.5	74.5	8.15	52	91
11:05	47	76	8.2	54	89
11:10	47	77.5	8.1	53	90
11:15	48	78.5	8.2	53	90
11:20	48	79	8.25	54	90
11:30	51	79	SL	56	94

TEST DATA

PRESSURE VENTILATION TEST

Experiment No. 18
Test Subject David Vogl
Altitude 34,000 ft
Treadmill Speed 2 mph

Suit Ventilation Rate 4 cfm
Dew Point Temperature 50°F
Suit Inlet Temperature 50°F

DATE

TREADMILL →

Time		11:05	11:10	11:15	11:20	11:25	11:30
Water Cooling In N/A		-	-	-	-	-	-
Heat Exchanger In		85	86	88	89	92	92
Heat Exchanger Out		53	52	52	53	55	55
Reheater Out	°F	92	93	95	95	99	99
Suit In		53	53	53	53	55	55
Suit Out		90	90	89	91	91	90
Water Tank (Chiller)		47	46	48	48	49	49
Water Saturation Tank		96	97	99	99	102	102
Flowrate, Suit Ventilation	(cfm)	4.0	4.0	4.0	4.0	4.0	4.0
Dew Point, Suit In	°F	47	47	48	48	-	51
Dew Point, Suit Out	°F	76	77.5	78.5	79.	-	79
Sat Tank Pressure	"Hg A	11.0	11.0	11.0	11.3	24.0	32.0
Suit Pressure	"H_2O	12.-13.5	13.-15.0	13.-15.	13.-14.	11.0	0.5
Humidity Controller (Trerice)	N/A	-	-	-	-	-	-
Altitude	Ft	34K'	34K'	34K'	34K'	11K'	SL
	Alt	11.21	10K'	4K'	SL		
Cabin Air Temp	°F	78	86	89	90		
O_2 Consumption (L/min)							
CO_2 Production (L/min)							
Pulse Rate							
Blood Pressure							
Respiration Rate							
Body Temperature							
Comfort Level							

	Weight Before Test	Weight After Test
O_2 Bottle #1		
O_2 Bottle #2		
O_2 Bottle #3		

ALTITUDE EQUIPMENT DIVISION		
CALCULATED		
RECORDED		
DRAWN		
CHECKED		
APPROVED		

TEST DATA

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

PRESSURE VENTILATION TEST

Experiment No. 18
Test Subject David Vogl
Altitude 34,000 ft
Treadmill Speed 2 mph

Suit Ventilation Rate 4 cfm
Dew Point Temperature 50° F
Suit Inlet Temperature 50° F

Merc IV Suit
DATE May 31, 1962
BAR 29.89 "Hg A

START ←TREADMILL→

Time		9:42	9:50	9:55	10:00	10:05	10:10	10:15	10:20	10:25	10:30	10:35	10:40	10:45	10:50	10:55	11:00
Water Cooling In N/A		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Heat Exchanger In		82	82	82	82	82	82	82	78	78	78	78	78	78	78	81	82
Heat Exchanger Out		52	51	51	50	51	50	50	50	50	50	50	50	50	51	53	52
Reheater Out	°F	84	82	83	82	82	82	82	80	80	80	80	82	85	86	90	91
Suit In		52	52	52	51	51	51	52	50	50	51	51	52	52	52	53	54
Suit Out		82	82	82	82	81	88	86	87	87	87	89	89	89	89	90	91
Water Tank (Chiller)		47	47	46	46	46	46	48	46	46	46	48	46	47	48	47	47
Water Saturation Tank		87	86	85	86	84	84	83	82	82	82	84	86	89	91	94	95
Flowrate, Suit Ventilation	(cfm)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Dew Point, Suit In	°F	-	49	49	49	47	46.5	-	44	45	44	46.5	45	45	46	47	46.5
Dew Point, Suit Out	°F	-	59	59	58	57	56.5	-	54	53	54	54	52.5	53.5	59.5	67.0	74.5
Sat Tank Pressure	"HgA	30.0	23.0	23.0	23.0	23.0	23.0	12.5	10.1	10.1	10.1	11.2	11.3	11.0	11.0	11.0	11.0
Suit Pressure/Cabin	"H_2O	7.0-8.5	5.6-7.0	6.8-8.0	5.5-7.0	6.0-7.0	8.0-9.0	12.0-13.0	8.5-9.0	8.5-9.5	10.1-11.0	13.0-15.0	9.8-10.5	9.5-10.5	12.0-14.0	11.5-12.0	12.0-13
Humidity Controller (Service)	Not Used	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Altitude	Ft	5K'	10K'	10K'	10K'	10K'	13K'	34K'	34K'	34K'	34K'	34K'	34K'	34K'	34K'	34K'	34K'
	TIME	9:42	9:52	10:0[illegible]	10:23	10:3[illegible]											
	Tank Temp	76	74	75	74	75											
O_2 Consumption (L/min)																	
CO_2 Production (L/min)																	
Pulse Rate																	
Blood Pressure																	
Respiration Rate																	
Body Temperature																	
Comfort Level																	

	Weight Before Test, gm	Weight After Test, gm
O_2 Bottle #1	9780	9523
O_2 Bottle #2	-	-
O_2 Bottle #3	2744	2609
Linnan	400	411

ALTITUDE EQUIPMENT DIVISION		
CALCULATED		
RECORDED		
DRAWN		
CHECKED		
APPROVED		

TEST DATA

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

SS-1018-A

PRESSURE VENTILATION TEST

Experiment No. 19
Test Subject Dick Betts
Altitude 34,000
Treadmill Speed 2 mph

Suit Ventilation Rate 12.4 cfm
Dew Point Temperature 50°F
Suit Inlet Temperature 50°F

MERCURY SUIT
100% O_2 FOR SUIT
COOLING

DATE May 31, 1962
BAR 29.86 "Hg A

← TREADMILL →

Time		START 2:54	3:00	3:05	3:10	3:15	3:20	3:25	3:30	3:35	3:40	3:45	3:50	3:55	4:00	4:05	4:10
Water Cooling In	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Heat Exchanger In	°F	85	84	84	85	85	86	86	89	89	86	81	79	76	72	70	70
Heat Exchanger Out	°F	54	53	54	53	53	54	53	50	51	50	50	50	50	52	51	50
Reheater Out	°F	85	85	87	89	90	91	92	92	90	86	81	79	79	76	76	76
Suit In	°F	55	55	56	55	54	54	53	52	52	51	50	50	50	50	51	50
Suit Out	°F	85	84	86	89	90	88	86	90	83	82	81	86	86	86	86	86
Water Tank (Chiller)	°F	49	49	49	49	50	50	47	47	46	44	44	42	45	48	47	47
Water Saturation Tank	°F	89	90	92	93	94	95	96	95	87	84	80	77	75	74	75	76
Flowrate, Suit Ventilation	(cfm)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4
Dew Point, Suit In	°F	-	46	50	50	50	50	-	47	47	47.5	47	47	50	47	47	47
Dew Point, Suit Out	°F	-	61	62	65	70	68	-	61	62	60.5	60	60	69	71	74	72
Sat Tank Pressure	"Hg A	27.0	23.0	23.5	22.8	22.8	22.8	20.0	10.6	9.6	10.8	10.7	10.7	11.5	14.3	14.1	14.6
Suit Pressure/ Cabin	"H_2O	0.3	0.3	0.3	0.3	0.3	0.3	0.4	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Humidity Controller (Trace)	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Altitude	Ft	6K'	10K'	10K'	10K'	10K'	10K'	15K'	34K'	34K'	34K'	34K'	34K'	34K'	34K'	34K'	34K'
Tank Temp	°F								76							78	
O_2 Consumption (L/min)																	
CO_2 Production (L/min)																	
Pulse Rate																	
Blood Pressure																	
Respiration Rate																	
Body Temperature																	
Comfort Level																	

Note: Slight occilation in flow rator

	Weight Before Test	Weight After Test
O_2 Bottle #1	9750	
O_2 Bottle #2	-	-
O_2 Bottle #3	2739	
Linen	402	

ALTITUDE EQUIPMENT DIVISION		
CALCULATED		
RECORDED		
DRAWN		
CHECKED		
APPROVED		

TEST DATA

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

PRESSURE VENTILATION TEST

Experiment No. 19

Test Subject Dick Betts

Altitude 34,000 Ft

Treadmill Speed 2 mph

Suit Ventilation Rate 12.4 cfm

Dew Point Temperature 50°F

Suit Inlet Temperature 50°F

Time		TREADMILL 4:15	4:20	4:25
Water Cooling In	N/A	-	-	-
Heat Exchanger In		70	70	72
Heat Exchanger Out		49	48	49
Reheater Out		77	78	76
Suit In	°F	50	49	50
Suit Out		87	86	86
Water Tank (Chiller)		46	46	46
Water Saturation Tank		77	78	80
Flowrate, Suit Ventilation	cfm	12.4	12.4	12.4
Dew Point, Suit In	°F	47	47	47
Dew Point, Suit Out	°F	71.5	72	68
Sat Tank Pressure	"Hg A	14.2	14.7	14.2
Suit Pressure	"H_2O	1.0	1.0	1.0
Humidity Controller (Trouble)	N/A	-	-	-
Altitude	Ft	34K'	34K'	34K'
	Tank Temp °F			
O_2 Consumption (L/min)				
CO_2 Production (L/min)				
Pulse Rate				
Blood Pressure				
Respiration Rate				
Body Temperature				
Comfort Level				

	Weight Before Test	Weight After Test
O_2 Bottle #1		
O_2 Bottle #2		
O_2 Bottle #3		

ALTITUDE EQUIPMENT DIVISION

CALCULATED

RECORDED

DRAWN

CHECKED

APPROVED

TEST DATA

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

Date May 31, 1962

RUN NUMBER 19

TIME	DEW POINT °F IN	DEW POINT °F OUT	PRESS. ABS. "Hg A	SUIT TEMP °F IN	SUIT TEMP °F OUT
3:00	46	61	21.1	54	84
3:05	50	62	21.1	56	84
3:10	50	65	21.1	54	86
3:15	50	70	21	56	90
3:20	50	68	20.8	55	86
3:30	47	61	8.7	52	85
3:35	47	62	8.7	52	82
3:40	47.5	60.5	8.8	52	82
3:45	47	60	8.75	50	82
3:50	47	60	8.9	50	88
3:55	50	69	9.2	50	86
4:00	47	71	9.6	51	86
4:05	47	74	9.4	51	85
4:10	47	72	9.5	51	86
4:15	47	71.5	9.4	50	86
4:20	47	72	9.4	49	87
4:25	47	68	9.3	50	86

TEST DATA

Experiment No. 20
Test Subject Tom Dunne
Altitude 34,000 Ft
Treadmill Speed 2 mph

Suit Ventilation Rate 9.4 cfm
Dew Point Temperature 50°F
Suit Inlet Temperature 50°F

100% O_2 - Suit Ventilation

DATE June 1, 1962
BAR 29.85 "Hg A

TREADMILL

Time		START 10:46	10:55	11:00	11:05	11:10	11:15	11:20	11:25	11:30	11:35	11:40	11:45	11:50	11:55	12:00	12:05
Water Cooling In	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Heat Exchanger In	°F	99	95	93	92	91	90	88	88	85	83	82	82	82	82	83	83
Heat Exchanger Out	°F	50	51	50	49	50	50	51	50	50	50	50	49	49	50	50	50
Reheater Out	°F	99	95	93	92	92	91	90	88	86	86	86	84	84	84	85	85
Suit In	°F	50	52	51	50	50	50	51	51	50	50	50	51	51	50	50	50
Suit Out	°F	83	86	86	85	84	84	83	84	84	85	87	88	89	89	89	90
Water Tank (Chiller)	°F	44	46	47	47	46	46	45	44	45	46	466	46	47	44	44	444
Water Saturation Tank	°F	101	97	96	95	95	95	91	90	88	87	87	86	87	87	88	88
Flowrate, Suit Ventilation	(cfm)	94	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.
Dew Point, Suit In	°F	-	45.5	46	46	45	-	47	47	46	47	48	47	47.5	47	48	47.
Dew Point, Suit Out	°F	-	65.5	66	65	65	-	60	59	58	56	63	63	67	68	71.5	72
System Pressure	"Hg A	27.5	23.5	23.5	23.5	22.0	22.0	9.8	9.8	9.8	9.8	10.1	10.1	10.1	10.2	10.3	10.
Suit Pressure/Cabin	"H_2O	0.2	0.2	0.2	0.2	0.2	0.5	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.
Humidity Controller (Trerice)	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Altitude	Ft	6K'	10K'	10K'	10K'	12K'	20K'	34K'	34K'	34K'	34K'	34K'	34K'	34K'	34K'	34K'	34K
	Tank Temp °F			78							77						
O_2 Consumption (L/min)																	
CO_2 Production (L/min)																	
Pulse Rate																	
Blood Pressure																	
Respiration Rate																	
Body Temperature																	
Comfort Level																	

NOTE: 200 cc Drained from Heat Exchanger at 11:00
115 cc Drained from Heat Exchanger at 11:22
110 cc Drained from Heat Exchanger at 11:43

Broken zipper chest area - result ventilation leakage 11:39

	Weight Before Test, gm	Weight After Test, gm
O_2 Bottle #1	9750	
O_2 Bottle #2	-	
O_2 Bottle #3	2740	
Linen (Mero.)	739	

ALTITUDE EQUIPMENT DIVISION
CALCULATED
RECORDED
DRAWN
CHECKED
APPROVED

TEST DATA

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

PRESSURE VENTILATION TEST

Experiment No. 20
Test Subject Tom Dunne
Altitude 34,000 Ft
Treadmill Speed 2 mph

Suit Ventilation Rate 9.4 cfm
Dew Point Temperature 50°F
Suit Inlet Temperature 50°F

DATE June 1, 1962

Time		12:10			
Water Cooling In	N/A	-			
Heat Exchanger In	°F	83			
Heat Exchanger Out	°F	51			
Reheater Out	°F	85			
Suit In	°F	51			
Suit Out	°F	90			
Water Tank (Chiller)	°F	45			
Water Saturation Tank	°F	88			
Flowrate, Suit Ventilation	cfm	9.4			
Dew Point, Suit In	°F	47.5			
Dew Point, Suit Out	°F	73			
System Pressure	"HgA	10.3			
Suit Pressure	"H_2O	1.0			
Humidity Controller (Trerice)	N/A	-			
Altitude	Ft	34K'	15K'	8K'	
	Tank Temp		89	87	
O_2 Consumption (L/min)					
CO_2 Production (L/min)					
Pulse Rate					
Blood Pressure					
Respiration Rate					
Body Temperature					
Comfort Level					

	Weight Before Test	Weight After Test
O_2 Bottle #1		
O_2 Bottle #2		
O_2 Bottle #3		

ALTITUDE EQUIPMENT DIVISION

CALCULATED		
RECORDED		
DRAWN		
CHECKED		
APPROVED		

TEST DATA

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

Date June 1, 1962

RUN NUMBER 20

TIME	DEW POINT °F IN	DEW POINT °F OUT	PRESS. ABS. "Hg A	SUIT TEMP °F IN	SUIT TEMP °F OUT
10:55	45.5	65.5	20.75	51	86
11:00	46	66	20.75	52	86
11:05	46	65	20.9	50	85
11:10	45	65	20.9	50	83
11:20	47	60	7.8	52	82
11:25	47	59	7.8	50	84
11:30	46	58	7.8	51	84
11:35	47	56	7.9	50	85
11:40	48	63	8	49	86
11:45	47	63	8:05	50	88
11:50	47.5	67	8.1	50	89
11:55	47.5	68.5	8.05	50	89
12:00	48	71.5	8	49	88
12:05	47.5	72	8.05	51	90
12:10	47.5	73	8.1	52	90

TEST DATA

PRESSURE VENTILATION TEST

Experiment No. 21
Test Subject Tom Dunne
Altitude 34,000 Ft
Treadmill Speed 2 mph

Suit Ventilation Rate 6.1 cfm
Dew Point Temperature 50°F
Suit Inlet Temperature 50°F

DATE June 1, 1962
BAR 29.87 "Hg A
100% O_2 - Suit Ventilation

START — TREADMILL

Time		2:22	2:30	2:35	2:40	2:45	2:50	2:55	3:00	3:05	3:10	3:15	3:20	3:25	3:30	3:35	3:40
Water Cooling In	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Heat Exchanger In	°F	89	96	98	99	98	96	96	96	97	95	94	93	93	92	92	91
Heat Exchanger Out	°F	51	505	50	51	50	50	50	52	51	50	50	50	50	51	51	51
Reheater Out	°F	107	104	103	103	103	103	102	100	100	98	98	97	97	97	97	97
Suit In	°F	54	52	51	51	51	51	50	52	52	50	52	51	50	53	52	51
Suit Out	°F	86	86	88	86	86	87	86	86	86	86	88	87	87	90	91	92
Water Tank (Chiller)	°F	44	43	43	45	42	42	42	44	45	44	44	46	46	46	43	44
Water Saturation Tank	°F	110	107	106	106	106	105	105	104	103	102	101	101	101	100	100	101
Flowrate, Suit Ventilation	cfm	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1
Dew Point, Suit In	°F	-	51	51	51	51.5	-	51.5	51.5	52	50	49	48.5	47.5	50	50	50
Dew Point, Suit Out	°F	-	71	67	70	70	-	68	66.5	66.5	66	63.5	62	61	71	76	79
Sat Tank Pressure	"HgA	26.0	22.3	22.3	22.3	22.3	22.3	9.8	9.8	9.8	9.7	9.8	9.8	9.8	10.0	10.0	10.0
Suit Pressure /Cabin	"H_2O	0.2	0.2	0.2	0.2	0.2	0.2	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Humidity Controller (Trerice)	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Altitude	Ft	2K'	10K'	10K'	10K'	10K'	10K'	34K'	34K'	34K'	34K'	34K'	34K'	34K'	34K'	34K'	34K'
Tank Temp	°F	80		79				71	78			79	79				
O_2 Consumption (L/min)																	
CO_2 Production (L/min)																	
Pulse Rate																	
Blood Pressure																	
Respiration Rate																	
Body Temperature																	
Comfort Level																	

NOTE: 55 cc Drained from Heat Exchanger 2:38
115 cc Drained from Heat Exchanger 3:01
110 cc Drained from Heat Exchanger 3:20
100 cc Drained from Heat Exchanger 3:39

	Weight Before Test, gm	Weight After Test, gm
O_2 Bottle #1	-	-
O_2 Bottle #2	-	-
O_2 Bottle #3	-	-
Linen	- 399	572

ALTITUDE EQUIPMENT DIVISION
CALCULATED
RECORDED
DRAWN
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APPROVED

TEST DATA

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

SS-1018-R

PRESSURE VENTILATION TEST

Experiment No. 21
Test Subject Tom Dunne
Altitude 34,000 Ft
Treadmill Speed 2 mph

Suit Ventilation Rate 6.1 cfm
Dew Point Temperature 50°F
Suit Inlet Temperature 50°F

DATE June 1, 1962

TREADMILL

Time		3:45	3:50	3:55			4:07
Water Cooling In	N/A	-	-	-	-	-	-
Heat Exchanger In	°F	91	91	91			93
Heat Exchanger Out	°F	49	50	50			51
Reheater Out	°F	97	97	98			98
Suit In	°F	51	51	52			52
Suit Out	°F	91	91	93			93
Water Tank (Chiller)	°F	44	45	46			44
Water Saturation Tank	°F	101	101	101			99
Flowrate, Suit Ventilation	cfm	6.1	6.1	6.1			4.0
Dew Point, Suit In	°F	49	49.5	50			47
Dew Point, Suit Out	°F	81	81	82			76
System Pressure	"HgA	10.0	10.0	10.0			32.0
Suit Pressure	"H_2O	1.0	1.0	1.0			0.2
Humidity Controller (Trerice)	N/A	-	-	-	-	-	-
Altitude	Ft	34K'	34K'	34K'	34K'	6K'	SL
	Tank Temp °F	[illegible]			81	92	94
O_2 Consumption (L/min)							
CO_2 Production (L/min)							
Pulse Rate							
Blood Pressure							
Respiration Rate							
Body Temperature							
Comfort Level							

	Weight Before Test	Weight After Test
O_2 Bottle #1		
O_2 Bottle #2		
O_2 Bottle #3		

ALTITUDE EQUIPMENT DIVISION

CALCULATED		
RECORDED		
DRAWN		
CHECKED		
APPROVED		

TEST DATA

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

SS-101064

Date 6-1-62, 1962

RUN NUMBER 21

TIME	DEW POINT °F IN	DEW POINT °F OUT	PRESS. ABS. "Hg A	SUIT TEMP °F IN	SUIT TEMP °F OUT
2:30	51	71	20.8	50	86
2:35	51	67	20.8	50	86.5
2:40	51	70	20.9	52	86.5
2:45	51.5	70	20.9	51	86.5
2:55	51.5	68	7.6	52	86
3:00	51.5	66.5	7.5	51	86
3:05	52	66.5	7.55	52	86.5
3:10	50	66	7.6	51	86.5
3:15	49	63.5	7.65	51.5	88
3:20	48.5	62	7.6	52	86.5
3:25	47.5	61	7.55	51	87
3:30	50	71	7.7	52.5	90
3:35	50	76	7.65	51.5	92
3:40	49	79	7.7	52	92
3:45	49	81	7.75	51.5	91.5
3:50	49.5	81	7.75	51	92
3:55	50	82	7.7		
4:08	47	76			

TEST DATA

Experiment No. 22
Test Subject Tom Dunne
Altitude 34,000 Ft
Treadmill Speed 2 mph

Suit Ventilation Rate 4 cfm
Dew Point Temperature 50°F
Suit Inlet Temperature 50°F

DATE June 4, 1962
BAR

Time	Strip Chart #	10:36	10:43	10:48	10:54	11:02	11:07	11:12	11:17	11:22	11:27	11:32	11:37	11:42	11:47	11:52
Water Tank (Chiller) °F	7	52	52	48	48	48	48	48	48	47	48	48	42	42	42	
Saturation Tank °F	8	110	105	109	108	108	108	107	105	105	103	105	104	104	106	109
Heat Exchanger In °F	5	109	103	95	95	95	95	95	95	92	92	92	90	90	90	92
Heat Exchanger Out °F	16	53	53	53	50	52	50	50	52	52	49	49	49	49	49	49
Reheater Out Not used for this	test 4	109	105	106	105	105	105	95	102	101	101	101	102	102	104	106
Suit In °F	13	53	53	52	52	52	52	52	51	52	52	52	50	52	50	52
Dew Point, Suit In °F									46	46	45	45	46	47	46.5	47
Suit Out °F	14	85	85	84	88	88	88	88	88	87	90	89	90	90	91	90
Dew Point, Suit Out °F									62.5	62	63.0	63.0	68.0	69.0	70.0	78
Saturation Tank Pressure "Hg A.				9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	911	9.1	9.2	9.2	9.2
Flowrate, Suit Ventilation cfm				4	4	4	4	4	4	4	4	4	4	4	4	4
Suit/Cabin ΔP "H_2O	7"			5.1	5.1	5.2	5.1	7.5	5.1	5.1	5.0	5.3	5.3	5.5	5.5	5.8
Tank Altitude Ft	SL	6,000	8,000		34,000	34,000	34,000	34,000	34,000	34,000	34,000	34,000	34,000	34,000	34,000	34,000
Tank Air Temp °F	77°F	68					76					76°F			77	
Treadmill Start/Stop												START				
O_2 Consumption (L/min)																
CO_2 Production (L/min)																
Pulse Rate																
Blood Pressure																
Respiration Rate																
Body Temperature																
Comfort Level																
Remarks:																
H_2O Out	40 cc				150					90						

	Wt. Before Test	Wt. after Test	Time On Bottle
O_2 Bottle #1			
O_2 Bottle #2			
O_2 Bottle #3			

Garment Weight, gm
Before Test 402
After Test 542

ALTITUDE EQUIPMENT DIVISION
CALCULATED
RECORDED
DRAWN
CHECKED
APPROVED

PRESSURE SUIT VENTILATION T ST

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

Experiment No. 22
Test Subject Tom Dunne
Altitude 34,000 Ft
Treadmill Speed 2 mph

Suit Ventilation Rate 4 cfm
Dew Point Temperature 59°F
Suit Inlet Temperature 50°F

DATE June 4, 1962
BAR

Time	Strip Chart #	11:57	12:02	12:07	12:12	12:17	
Water Tank (Chiller) °F	7	42	42	42	41	41	
Saturation Tank °F	8	104	105	105	103	104	
Heat Exchanger In °F	5	93	96	98	102	98	
Heat Exchanger Out °F	16	50	50	50	50	50	
Reheater Out °F	4	103	104	104	103	102	
Suit In °F	13	52	51	52	50	50	
Dew Point, Suit In °F		47	47				
Suit Out °F	14	90	90	90	90	90	
Dew Point, Suit Out °F		81	81				
Saturation Tank Pressure "Hg A.		9.2	9.2	15.3	17.0	29.0	
Flowrate, Suit Ventilation (cfm)		4	4	4	4		
Suit/Cabin ΔP "H_2O		6.0	8.5	7.5	6.5	3.0	
Tank Altitude Ft		34,000	34,000	21,000	18,000	3,000	SL
Tank Temp °F		78	80		86	88	90
Treadmill Start/Stop		STOP					
O_2 Consumption (L/min)							
CO_2 Production (L/min)							
Pulse Rate							
Blood Pressure							
Respiration Rate							
Body Temperature							
Comfort Level							
Remarks:			420				

	Wt. Before Test	Wt. after Test	Time On Bottle
O_2 Bottle #1			
O_2 Bottle #2			
O_2 Bottle #3			

Garment Weight
Before Test
After Test

ALTITUDE EQUIPMENT DIVISION
CALCULATED
RECORDED
DRAWN
CHECKED
APPROVED

PRESSURE SUIT VENTILATION TEST

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

Date 6-4-62, 1962

RUN NUMBER 22

TIME	DEW POINT °F IN	DEW POINT °F OUT	PRESS. ABS. "Hg A	SUIT TEMP °F IN 13	SUIT TEMP °F OUT 14
11:14	46	62.5	7.3	50	87
11:20	46	62.0	7.3	49	87
11:25	45.5	63.0	7.3	49	87
11:30	45.0	63.0	7.3	50	88
11:37	46.0	68.0	7.3	50	90
11:42	47.0	69.0	7.3	50	90
11:47	46.5	70.0	7.3	50	91
11:52	47.0	78.0	7.3	49	92
11:57	47.0	81.0	7.25	50	92
12:02	47.0	81.0	7.30	51	92
12:19	47.5	82.0	S.L.	50	90

Experiment No. 23
Test Subject Tom Dunne
Altitude 34,000 Ft
Treadmill Speed 2 mph

Suit Ventilation Rate 10 cfm
Dew Point Temperature 50°F
Suit Inlet Temperature 50°F

DATE June 4, 1962
BAR 29.83 "Hg A

Time	Strip Chart #	2:50	2:55	3:00	3:05	3:10	3:15	3:20	3:25	3:30	3:35	3:40	3:45	3:50	3:55	4:00
Water Tank (Chiller) °F	7	42	49	50	49	49	49	48	48	48	48	48	41	42	41	48
Saturation Tank °F	8	142	120	110	104	105	100	92	89	86	82	81	80	80	82	82
Heat Exchanger In °F	5	135	120	110	104	100	98	92	89	88	84	80	80	79	79	80
Heat Exchanger Out °F	16	52	61	56	55	52	52	52	51	50	50	50	50	49	50	50
Reheater Out °F	4	149	120	110	104	100	98	92	90	89	88	88	81	80	80	80
Suit In °F	13	52	60	58	55	52	52	51	51	50	50	50	49	49	50	50
Dew Point, Suit In °F			49	54	53	53			49	49	48	47	45	46	46	46
Suit Out °F	14	82	82	85	82	86	82	91	81	81	82	82	80	80	82	80
Dew Point, Suit Out °F			66	66	67	68			60	61	60	60	56	57	64	67
Saturation Tank Pressure "Hg A.		24	23.5	23.0	24.5	24.6	24.5	12.5	11.2	11.3	11.3	11.3	10	11.5	11.4	11.4
Flowrate, Suit Ventilation cfm		10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Suit/Cabin ΔP "H_2O		11	11.4	7.5	13.5	16.0	13	21.0	20.8	20.5	20.5	11.5	22.0	20.0	20.5	22.0
Tank Altitude Ft		6,000	10,000	10,000	10,000	10,000	10,000	28.000	34,000	34,000	34,000	34,000	34,000	34,000	34,000	34,000
Tank Temp °F		80	76		79			71			78			79		
Treadmill Start/Stop																
O_2 Consumption (L/min)																
CO_2 Production (L/min)																
Pulse Rate																
Blood Pressure																
Respiration Rate																
Body Temperature																
Comfort Level																
Remarks: H_2O Out		55cc						285 cc			420			480		

	Wt. Before Test	Wt. after Test.	Time On Bottle
O_2 Bottle #1			
O_2 Bottle #2			
O_2 Bottle #3			

Garment Weight, gm
Before Test 413
After Test 530

ALTITUDE EQUIPMENT DIVISION
CALCULATED
RECORDED
DRAWN
CHECKED
APPROVED

PRESSURE SUIT VENTILATION TEST

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

SS-1018-8

Experiment No. 23
Test Subject Tom Dunne
Altitude 34,000 Ft
Treadmill Speed 2 mph

Suit Ventilation Rate 10 cfm
Dew Point Temperature 50°F
Suit Inlet Temperature 50°F

DATE June 4, 1962
BAR 29.83 "Hg A

Time	Strip Chart #	4:05	4:10	4:15	4:20	4:25	4:30	3:35	4440	4:45	4:50
Water Tank (Chiller) °F	7	48	44	44	44	41	42	45	45	41	40
Saturation Tank	8	86	88	80	92	92	91	90	88	82	81
Heat Exchanger In	5	80	81	82	87	86	88	88	86	82	82
Heat Exchanger Out	16	51	51	51	50	49	50	50	50	50	50
Reheater Out	4	81	82	83	88	88	89	88	86	82	82
Suit In	13	50	50	50	50	50	49	50	50	50	50
Dew Point, Suit In		49.5	48.5	47.5	48	47.5	48				48
Suit Out	14	81	82	83	86	88	82	76	86	81	83
Dew Point, Suit Out		70.0	72	75	75.5	73	68				82
Saturation Tank Pressure "Hg A.		11.4	11.3	11.3	11.3	11.2	12.5	16.6	24.5	27.3	32
Flowrate, Suit Ventilation		10	10	10	10	10	10	10	10	10	3
Suit/Cabin ΔP "H_2O		22.3	23.0	23.5	23.5	23.5	18.8	11.0	20.0	18	5
Tank Altitude Ft		34K	34K	34K	34K	34K	31K	19K	11K	7K	SL
Tank Temp °F			79		79			83		85	86
Treadmill Start/Stop						STOP					
O_2 Consumption (L/min)											
CO_2 Production (L/min)											
Pulse Rate											
Blood Pressure											
Respiration Rate											
Body Temperature											
Comfort Level											
Remarks:									730 cc		
H_2O Out			575 cc								

	Wt. Before Test	Wt. after Test	Time On Bottle
O_2 Bottle #1			
O_2 Bottle #2			
O_2 Bottle #3			

Garment Weight Before Test
After Test

ALTITUDE EQUIPMENT DIVISION		
CALCULATED		
RECORDED		
DRAWN		
CHECKED		
APPROVED		

PRESSURE SUIT VENTILATION TEST

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

Date 6 - 4, 1962

RUN NUMBER 23

TIME	DEW POINT °F IN	DEW POINT °F OUT	PRESS. ABS. "Hg A	SUIT TEMP °F IN	SUIT TEMP °F OUT
2:56	49	66	21.3	58	86
3:00	54	66	20.3	56	85
3:05	53	67	20.3	56	86
3:10	53	68	21.3	54	86
3:25	49	60	8.1	51	82
3:30	49	61	8.1	51	83
3:35	48	60	8.1	50	83
3:40	47	60	7.5	50	85
3:45	45	56	8.0	49	82
3:50	46	57	7.9	48	82
3:55	46	64	8.1	49	85
4:00	46	67	8.1	50	86
4:05	49.5	70	8.3	50	87
4:10	48.5	72	8.3	49	88
4:15	47.5	75	8.2	50	88
4:20	48	75.5	8.2	49	88
4:25	47.5	73	8.3	48	87
4:29	48	68	8.2	50	84
4:53	48	82	S.L.	50	86

Date 6-4-62, 1962

RUN NUMBER 23

TIME	DEW POINT °F IN	DEW POINT °F OUT	PRESS. ABS. "Hg A	SUIT TEMP °F IN	SUIT TEMP °F OUT
				13	14
2:56	49	66	21.3	58	86
3:00	54	66	20.8	56	86
3:05	53	67	20.8	56	86
3:10	53	68	21.3	54	86
3:25	49	60	8.1	51	82
3:30	49	61	8.1	51	83
3:35	48	60	8.1	50	83
3:40	47	60	7.5	50	85
3:45	45	56	8.0	49	82
3:50	46	57	7.9	48	82
3:55	46	64	8.1	49	85
4:00	46	67	8.1	50	86
4:05	49.5	70	8.3	50	87
4:10	48.5	72	8.3	49	88
4:15	47.5	75	8.2	50	88
4:20	48	75.5	8.2	49	88
4:25	47.5	73	8.3	48	87
4:29	48	68	8.2	50	84
4:53	48	82	S.L.	50	86

Experiment No. 24
Test Subject Dick Betts
Altitude 34,000
Treadmill Speed 2 mph

Suit Ventilation Rate 6 cfm
Dew Point Temperature 50°F
Suit Inlet Temperature 50°F

DATE June 5, 1962
BAR 29.90 "Hg A

Time	Strip Chart #	9:40	9:45	9:50	9:55	10:00	10:05	10:10	10:15	10:20	10:25	10:30	10:35	10:40	10:45	10:50
Water Tank (Chiller) °F	7	69	68	65	60	56	52	52	50	50	49	49	49	46	46	44
Saturation Tank °F	8	79	102	80	80	81	105	88	89	90	90	92	92	96	98	98
Heat Exchanger In °F	5	79	79	79	79	80	79	79	80	80	80	80	81	82	85	86
Heat Exchanger Out °F	16	51	70		61	58	56	56	52	52	52	50	52	50	50	49
Reheater Out °F	4	79	79	79	79	81	82	82	82	82	85	89	90	90	92	90
Suit In °F	13	51	69	65	61	59	58	58	52	52	52	51	52	50	50	50
Dew Point, Suit In °F					65	62	60				51.5	51.5	50	47.5	49	50
Suit Out °F	14	75	85	85	81	81	80	82	80	85	81	82	81	82	82	86
Dew Point, Suit Out °F					72	71	66			64	63	62.5	63	60	61	71
Saturation Tank Pressure "Hg A.		33.5	28.5	26.5	25	25.2	25.2	25.8	17	12.8	9.5	9.5	9.8	10.0	10.0	10.0
Flowrate, Suit Ventilation cfm		6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Suit/Cabin ΔP "H_2O		22.0	24.5	24.0	23	19.8	19.8	23.5	29.5	12.0	7.2	7.2	13.0	13.0	14	14.5
Tank Altitude Ft		SL	6K	10K	10K	10K	10K	11K	25K	34K	34K	34K	34K	34K	34K	34K
Treadmill Start/Stop		77		75					73							START
O_2 Consumption (L/min)																
CO_2 Production (L/min)																
Pulse Rate																
Blood Pressure																
Respiration Rate																
Body Temperature																
Comfort Level																
Remarks:															70	
HEX H_2O Out	oo								165 oo							

	Wt. Before Test	Wt. after Test	Time On Bottle
O_2 Bottle #1			
O_2 Bottle #2			
O_2 Bottle #3			

Garment Weight, gm
Before Test 733
After Test 759

ALTITUDE EQUIPMENT DIVISION
CALCULATED
RECORDED
DRAWN
CHECKED
APPROVED

PRESSURE SUIT VENTILATION TEST

AIRESEARCH MANUFACTURING CO.
LOS ANGELES · CALIFORNIA

Experiment No. 24
Test Subject Dick Betts
Altitude 34,000
Treadmill Speed 2 mph

Suit Ventilation Rate 6 cfm
Dew Point Temperature 50°F
Suit Inlet Temperature 50°F

DATE June 5, 1962
BAR 29.90 "Hg A

Time	Strip Chart #	10:55	11:00	11:05	11:10	11:15	11:20	11:25	11:30	11:35
Water Tank (Chiller) °F	7	44	44	44	44	42	42	44	45	42
Saturation Tank °F	8	98	100	99	100	100	100	100	100	98
Heat Exchanger In °F	5	86	88	89	86	90	89	90	92	91
Heat Exchanger Out °F	16	50	50	50	49	49	49	50	50	50
Reheater Out °F	4	94	94	95	95	95	95	96	96	96
Suit In °F	13	50	50	50	50	49	49	49	50	50
Dew Point, Suit In °F		50	51	49.5	49	49	48			48
Suit Out °F	14	86	89	89	90	89	88	86	88	86
Dew Point, Suit Out °F		71	72.5	76	77	79	78			73
Saturation Tank Pressure "Hg A		10.0	10.0	10.0	10.0	10.0	11.8	18	28.5	31.5
Flowrate, Suit Ventilation		6	6	6	6	6	6	6	6	6
Suit/Cabin ΔP "H_2O		15.0	15.5	15.5	15.5	15.2	15.5	20.5	26.5	16.8
Tank Altitude Ft		34,000	34K	34K	34K	34K	34K	20K	6K	SL
[illegible]		76.5		78	78		80	82	83	86
Treadmill Start/Stop						STOP				
O_2 Consumption (L/min)										
CO_2 Production (L/min)										
Pulse Rate										
Blood Pressure										
Respiration Rate										
Body Temperature										
Comfort Level										
Remarks: HEX H_2O out °F				130						140

	Wt. Before Test	Wt. after Test	Time On Bottle	Garment Weight
O_2 Bottle #1				Before Test
O_2 Bottle #2				
O_2 Bottle #3				After Test

ALTITUDE EQUIPMENT DIVISION		
CALCULATED		
RECORDED		
DRAWN		
CHECKED		
APPROVED		

PRESSURE SUIT VENTILATION TEST

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

Date 6-5-62, 1962

RUN NUMBER 24

TIME	DEW POINT °F IN	DEW POINT °F OUT	PRESS. ABS. "Hg A	SUIT TEMP °F IN 13	SUIT TEMP °F OUT 14
9:50	65	75	22.1	67	83
9:55	62	72	22.0	63	83
10:00	60	71	21.9	60	82
10:05	57	66	21.8	59	82
10:20	52	64	8.1	54	83
10:25	51.5	63	7.3	54	83
10:30	51.5	62.5	7.4	52	84
10:35	50	63	7.8	50	83
10:40	47.5	60	7.8	49	84
10:45	49	61	7.9	50	82
10:50	50	71	7.9	50	87
10:55	50	71	8.0	50	88
11:00	51	72.5	8.0	51	88
11:05	49.5	76	7.3	50	90
11:10	49	77	7.3	49	89
11:15	49	79	7.4	50	90
11:20	48	78	7.4	48	90
11:35	48	73	S.L.	49	86

Experiment No. 25
Test Subject Andre Kas
Altitude 34,000
Treadmill Speed 2 mph

Suit Ventilation Rate 8 cfm
Dew Point Temperature 50°F
Suit Inlet Temperature 50°F

DATE June 5, 1962
BAR 29.90 "Hg A

Time	Strip Chart #	1:35	1:40	1:45	1:50	1:55	2:00	2:05	2:10	2:15	2:20	2:25	2:30	2:35	2:40	2:45
Water Tank (Chiller) °F	7	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42
Saturation Tank °F	8	101	101	100	100	100	100	100	96	96	94	94	94	94	94	94
Heat Exchanger In °F	5	91	91	91	92	91	91	91	91	90	90	90	89	89	88	88
Heat Exchanger Out °F	16	494	50	50	49	50	50	49	50	50	49	49	50	50	50	50
Reheater Out °F	4	96	96	96	94	95	95	96	92	91	91	91	90	90	90	90
Suit In °F	13	49	50	50	49	50	50	49	50	50	49	49	50	50	50	50
Dew Point, Suit In °F			46.5	47.5	48	48	49		47	48	48	48	48.5	48.5	48	48.5
Suit Out °F	14	86	85	82	84	86	85	86	86	84	86	86	85	85	79	79
Dew Point, Suit Out °F			57	59	62	60	61		56	56	57	58	57	57	62	67.5
Saturation Tank Pressure "Hg A.		32.4	26	24.2	23	23	23	19	11.8	10	10.5	10.4	10.4	10.0	10.0	11.8
Flowrate, Suit Ventilation cfm		8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
Suit/Cabin ΔP "H_2O		13	8.5	13	10	11	6.6	9	18.5	18.10	9.5	9.2	10.0	18	19	20.0
Tank Altitude Ft		SL	10K	10K	10K	10K	10K	17K	34K	34K	34K	34K	34K	34K	34K	34K
		80	75				79		75		78					
Treadmill Start/Stop															START	
O_2 Consumption (L/min)																
CO_2 Production (L/min)																
Pulse Rate																
Blood Pressure																
Respiration Rate																
Body Temperature																
Comfort Level																
Remarks: Heat Exchanger H_2O out cc 95									235						310	

	Wt. Before Test	Wt. after Test	Time On Bottle
O_2 Bottle #1			
O_2 Bottle #2			
O_2 Bottle #3			

Garment Weight, gm
Before Test 399
After Test 470

ALTITUDE EQUIPMENT DIVISION		
CALCULATED		
RECORDED		
DRAWN		
CHECKED		
APPROVED		

PRESSURE SUIT VENTILATION TEST

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

Experiment No. 25
Test Subject Andre Kaz
Altitude 34K
Treadmill Speed 2 mph

Suit Ventilation Rate 8 cfm
Dew Point Temperature 50°F
Suit Inlet Temperature 50°F

DATE June 5, 1962
BAR 29.90 "Hg A

Time	Strip Chart #	2:50	2:55	3:00	3:05	3:10	3:15	3:20	3:25
Water Tank (Chiller) °F	7	42	42	41	41	42	44	44	40
Saturation Tank °F	8	94	96	98	100	100	100	100	100
Heat Exchanger In °F	5	89	90	90	90	90	91	91	94
Heat Exchanger Out °F	16	49	49	49	49	49	49	49	48
Reheater Out °F	4	91	92	93	95	95	96	96	96
Suit In °F	13	49	49	49	49	50	50	50	49
Dew Point, Suit In °F		47	47	47	50	49	49		50
Suit Out °F	14	90	90	90	90	90	89	89	88
Dew Point, Suit Out °F		74	76	78	79	81.5	76		80
Saturation Tank Pressure "Hg A.		11.8	11.8	11.6	11.6	11.4	11.5	16.8	33.5
Flowrate, Suit Ventilation		8	8	8	8	8	8	8	8
Suit/Cabin ΔP "H_2O		20.8	21	21.5	22	22	20	7.5	9.5
Tank Altitude Ft		34K	34K	34K	34K	34K	34K	19K	SL
		79					80	84	88
Treadmill Start/Stop						STOP			
O_2 Consumption (L/min)									
CO_2 Production (L/min)									
Pulse Rate									
Blood Pressure									
Respiration Rate									
Body Temperature									
Comfort Level									
Remarks:									
Heat Ex. H_2O Out cc							400		

	Wt. Before Test	Wt. after Test	Time On Bottle
O_2 Bottle #1			
O_2 Bottle #2			
O_2 Bottle #3			

Garment Weight
Before Test
After Test

ALTITUDE EQUIPMENT DIVISION
CALCULATED
RECORDED
DRAWN
CHECKED
APPROVED

PRESSURE SUIT VENTILATION TEST

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

Date 6-5-62, 196

RUN NUMBER 25

TIME	DEW POINT °F IN	DEW POINT °F OUT	PRESS. ABS. "Hg A	SUIT TEMP °F IN	SUIT TEMP °F OUT
1:40	46.5	57	21.5	49	83
1:45	47.5	59	21.8	50	84
1:50	48	62	21.8	48	86
1:55	48	60	21.6	48	86
2:00	49	61	20.9	49	87
2:10	47	56	7.8	49	86
2:15	48	56	8.0	49	86
2:20	48	57	7.4	48	86
2:25	48	58	7.4	48	88
2:30	48.5	57	7.4	49	88
2:35	48.5	57	7.4	49	88
2:40	48	62	8.1	51	90
2:45	48.5	67.5	8.1	50	90
2:50	47	74	8.2	50	91
2:55	47	76	7.5	48	91
3:00	47	78	7.5	50	92
3:05	50	79	7.5	50	90
3:10	49	81.5	7.5	50	90
3:15	49	76	7.5	49	88
3:25	50	76	S.L.	50	89

Experiment No. 26
Test Subject Dick Betts
Altitude 34,000 Ft
Treadmill Speed 2 mph

Suit Ventilation Rate 4 cfm
Dew Point Temperature 50°F
Suit Inlet Temperature 50°F

DATE June 6, 1962
BAR 29.89 "Hg A

Time	Strip Chart #	9:15	9:20	9:25	9:30	9:35	9:40	9:45	9:50	9:55	10:00	10:05	10:10	10:15	10:20	10:25
Water Tank (Chiller) °F	7	42	42	42	42	42	42	40	41	41	42	42	40	40	40	42
Saturation Tank °F	8	100	119	116	116	114	114	114	112	114	112	112	112	112	112	110
Heat Exchanger In °F	5	100	102	105	105	102	102	100	102	100	98	98	100	100	100	100
Heat Exchanger Out °F	16	50	50	50	50	50	50	49	49	49	49	49	48	48	49	54
Reheater Out °F	4	100	110	113	112	112	112	111	110	110	110	110	110	110	110	108
Suit In °F	13	50	50	50	50	50	50	49	49	49	50	50	50	49	49	52
Dew Point, Suit In °F				47	48	47.5	46.5			47	47	47.5	46	45	47	50
Suit Out °F	14	85	82	84	84	84	84	84	84	84	85	85	85	86	86	88
Dew Point, Suit Out °F				62	64.5	65.5	66.5			61	66	62.5	60	64	67	72
Saturation Tank Pressure "Hg A.		31	27.5	24.5	24.4	24.4	24.0	20.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
Flowrate, Suit Ventilation		4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Suit/Cabin ΔP "H_2O		12	8.2	9.5	9.0	9.0	9.0	10	7.5	7.0	6.8	6.5	6.5	7.0	7.0	8.0
Tank Altitude Ft		SL	7K	10K	10K	10K	10K	1700	3400	34K	34K	34K	34K	34K	34K	34K
Treadmill Start/Stop		74				76		72			74		76		76 START	
O_2 Consumption (L/min)																
CO_2 Production (L/min)																
Pulse Rate																
Blood Pressure																
Respiration Rate																
Body Temperature																
Comfort Level																
Remarks:																
Heat Exchanger H_2O Out cc				60						155				155		
Recorder Jumping																

	Wt. Before Test	Wt. after Test	Time On Bottle
O_2 Bottle #1			
O_2 Bottle #2			
O_2 Bottle #3			

Garment Weight, gm
Before Test 750
After Test 780

ALTITUDE EQUIPMENT DIVISION
CALCULATED
RECORDED
DRAWN
CHECKED
APPROVED

PRESSURE SUIT VENTILATION TEST

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

SS-1018-R

Experiment No. 26
Test Subject Dick Betts
Altitude 34,000 Ft
Treadmill Speed 2 mph

Suit Ventilation Rate 4 cfm
Dew Point Temperature 50°
Suit Inlet Temperature 50°

DATE June 6, 1962
BAR 29.89 "Hg A

Time	Strip Chart #	10:30	10:35	10:40	10:45	10:50	10:55	11:00	11:05
Water Tank (Chiller)	7	42	42	40	40	40	41	42	46
Saturation Tank	8	109	109	106	103	100	95	92	94
Heat Exchanger In	5	100	100	98	98	96	94	92	88
Heat Exchanger Out	16	50	50	49	49	49	49	51	52
Reheater Out °F	4	106	106	102	101	98	94	92	88
Suit In	13	51	50	49	49	49	49	51	52
Dew Point, Suit In		50	47.5	47.5	47	46	47		
Suit Out	14	90	90	90	91	90	98	96	99
Dew Point, Suit Out		78	78	78.0	80	81	80.5		
Saturation Tank Pressure "Hg A.		9.0	9.0	9.0	9.0	8.8	11.5	21.0	33.5
Flowrate, Suit Ventilation		4	4	4	4	4	4	4	4
Suit/Cabin ΔP "H_2O		8.0	8.5	8.5	8.0	8.5	8.5	11.2	0
Tank Altitude Ft		34K	34K	34K	34K	34K	34K	13K	SL
[illegible]		77			77		78	81	84
Treadmill Start/Stop									
O_2 Consumption (L/min)									
CO_2 Production (L/min)									
Pulse Rate									
Blood Pressure									
Respiration Rate									
Body Temperature									
Comfort Level									
Remarks:									
Heat Ex. H_2O Out cc			65		35		80		

84

	Wt. Before Test	Wt. after Test	Time On Bottle
O_2 Bottle #1			
O_2 Bottle #2			
O_2 Bottle #3			

Garment Weight, gm
Before Test 750
After Test

ALTITUDE EQUIPMENT DIVISION		
CALCULATED		
RECORDED		
DRAWN		
CHECKED		
APPROVED		

PRESSURE SUIT VENTILATION T ST

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

Date 6-6-62, 1962

RUN NUMBER 26

TIME	DEW POINT °F IN	DEW POINT °F OUT	PRESS. ABS. "Hg A	SUIT TEMP °F IN	SUIT TEMP °F OUT
9:25	47	62	20.9	51	83
9:30	48	64.5	20.9	52	84
9:35	47.5	65.5	21.0	50	84
9:40	46.5	66.5	21.2	49	84
9:55	47	61	7.2	49	84
10:00	47	66	7.2	49	85
10:05	47.5	62.5	7.2	49	86
10:10	46	60	7.2	48	86
10:15	45	64	7.2	48	86
10:20	47	67	7.2	50	88
10:25	50	72	7.2	52	89
10:30	50	78	7.2	53	90
10:35	47.5	78	7.2	51	90
10:40	47.5	78	7.2	50	92
10:45	47	80	7.3	49	91
10:50	46	81	7.3	48	91
10:55	47	80.5	7.4	50	91
11:	51	81.5	S.L.	52	87

Experiment No. 27
Test Subject Dick Betts
Altitude 34,000 Ft
Treadmill Speed 2 mph

Suit Ventilation Rate 8 cfm
Dew Point Temperature 50°F
Suit Inlet Temperature 50°F

DATE June 6, 1962
BAR 29.87 "Hg A

Time	Strip Chart #	1:30	1:35	1:40	1:45	1:50	1:55	2:00	2:05	2:10	2:15	2:20	2:25	2:30	2:35	2:40
Water Tank (Chiller) °F	7	42	42	44	44	42	40	40	42	42	41	40	40	40	41	40
Saturation Tank °F	8	98	98	96	95	95	95	96	97	97	96	92	92	92	93	94
Heat Exchanger In °F	5	95	95	92	90	90	90	92	90	90	89	88	87	87	88	88
Heat Exchanger Out °F	16	50	50	50	50	49	49	50	54	50	49	48	49	49	50	49
Reheater Out °F	4	95	95	92	90	90	92	93	92	92	90	89	88	88	89	90
Suit In °F	13	50	50	50	50	49	49	50	54	51	50	49	49	49	50	50
Dew Point, Suit In °F				47	-	-	-	-	-	-	-	-	-	49	48.5	48.5
Suit Out °F	14	86	82	81	84	82	82	90	82	82	84	80	84	84	85	86
Dew Point, Suit Out °F				62	59	58	63	63	-	-	-	-	-	60	57	65
Saturation Tank Pressure "Hg A		32.5	31	24	24.8	23	23	23	18.5	13	11.5	11.2	10.0	10	10.0	10.5
Flowrate, Suit Ventilation cfm		8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
Suit/Cabin ΔP "H_2O		0.5	18	21	14	14	13.5	16	14	19.5	17	16.5	17	17	17.0	9.0
Tank Altitude Ft		SL	1,800	10K	10K	10K	10K	10K	10K	31K	34K	34K	34K	34K	34K	34K
Tank Temp °F		80	75	76				79			77	77		78	79	
Treadmill Start/Stop																
O_2 Consumption (L/min)																
CO_2 Production (L/min)																
Pulse Rate																
Blood Pressure																
Respiration Rate																
Body Temperature																
Comfort Level																
Remarks:																
Heat Ex. H_2O Out °C			350			70				90		70		60		
(Water in Dew Point line no "In"																
Dew Point Could be taken)																

	Wt. Before Test	Wt. after Test	Time On Bottle
O_2 Bottle #1			
O_2 Bottle #2			
O_2 Bottle #3			

Garment Weight, gm
Before Test 397
After Test 433

ALTITUDE EQUIPMENT DIVISION		
CALCULATED		
RECORDED		
DRAWN		
CHECKED		
APPROVED		

PRESSURE SUIT VENTILATION TEST

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

Experiment No. 27
Test Subject Dick Betts
Altitude 34,000 Ft
Treadmill Speed 2 mph

Suit Ventilation Rate 8 cfm
Dew Point Temperature 50°F
Suit Inlet Temperature 50°F

DATE June 6, 1962
BAR 29.87 "Hg A

Time	Strip Chart #	2:45	2:50	2:55	3:00	3:05	3:10	3:15	3:20	3:25	3:30
Water Tank (Chiller) °F	7	40	39	39	40	42	44	44	40	40	40
Saturation Tank °F	8	94	95	95	95	95	95	95	95	93	102
Heat Exchanger In °F	5	87	88	88	88	88	90	90	89	90	80
Heat Exchanger Out °F	16	50	49	49	51	51	50	50	49	49	50
Reheater Out °F	4	90	90	90	90	91	92	92	91	90	90
Suit In °F	13	49	49	49	50	50	50	51	50	49	51
Dew Point, Suit In °F		48.5	49	47	50	50	49	50			49
Suit Out °F	14	87	87	88	89	89	89	88	85	85	87
Dew Point, Suit Out °F		64.5	67	67	75	72	73	72			72
Saturation Tank Pressure "Hg A.		10	9.2	11.5	11.5	11.7	11.5	11.5	16.5	33.2	33.2
Flowrate, Suit Ventilation cfm		8	8	8	8	8	8	8	8	8	8
Suit/Cabin ΔP "H_2O		18	20	20	22	20	21	21	18	0	0
Tank Altitude Ft		34K	34K	34K	34K	34K	34K	34K	22K	1K	SL
Tank Temp °F		79			80	80			82	86	88
Treadmill Start/Stop		START						STOP			
O_2 Consumption (L/min)											
CO_2 Production (L/min)											
Pulse Rate											
Blood Pressure											
Respiration Rate											
Body Temperature											
Comfort Level											
Remarks:											
Heat Ex. H_2O Out cc		60		60		30		60		50	

	Wt. Before Test	Wt. after Test	Time On Bottle
O_2 Bottle #1			
O_2 Bottle #2			
O_2 Bottle #3			

Garment Weight
Before Test
After Test

ALTITUDE EQUIPMENT DIVISION		
CALCULATED		
RECORDED		
DRAWN		
CHECKED		
APPROVED		

PRESSURE SUIT VENTILATION TEST

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

SS-1018-R

Date 6-6-62, 1962

RUN NUMBER 27

TIME	DEW POINT °F IN	DEW POINT °F OUT	PRESS. ABS. "Hg A	SUIT TEMP °F IN	SUIT TEMP °F OUT
1:40	47	62	21.5	50	81
1:45	H_2O	59	21.5	48	83
1:50	IN D.P.	58	21.5	46	83
1:55	LINE	63	21.5	48	82
2:00	LINE	63	21.5	49	81
2:30	49	60	7.4	49	84
2:35	48.5	57	7.1	50	85
2:40	48.5	65	7.2	50	86
2:45	48.5	64.5	7.2	49	88
2:50	49	67	7.3	49	88
2:55	47	67	7.4	48	88
3:00	50	75	7.4	50	90
3:05	50	72	7.4	50	90
3:10	49	76	7.4	50	88
3:15	50	72	7.3	50	88
3:30	49	72	S.L.	50	85

Experiment No. 28
Test Subject Tom Dunne
Altitude 34,000
Treadmill Speed 2 mph

Suit Ventilation Rate 12 cfm
Dew Point Temperature 50°F
Suit Inlet Temperature 50°F

DATE June 7, 1962
BAR 29.85 "Hg A

Time	Strip Chart #	9:05	9:10	9:15	9:20	9:25	9:30	9:35	9:40	9:45	9:50	9:55	10:00	10:05	10:10	10:15
Water Tank (Chiller) °F	7	42	42	40	40	40	42	40	40	42	40	40	42	41	39	42
Saturation Tank °F	8	88	85	80	80	80	82	82	83	84	84	83	83	85	98	92
Heat Exchanger In °F	5	80	80	80	80	78	78	78	78	78	78	78	78	78	81	85
Heat Exchanger Out °F	16	48	48	48	48	48	49	49	49	52	54	50	50	50	51	50
Reheater Out °F	4	85	85	81	81	80	80	80	80	82	80	81	80	81	85	88
Suit In °F	13	49	49	48	48	48	49	49	49	52	54	50	50	50	50	52
Dew Point, Suit In °F					47	47.5					52	49.5				
Suit Out °F	14	85	85	80	80	80	80	82	828	83	80	81	82	82	83	84
Dew Point, Suit Out °F					64	58					60	62	Tank Down			
Saturation Tank Pressure "Hg A.		33	32.5	28	29.5	28	25	18	23.5	10.0	10	10	11	10	23.5	25.5
Flowrate, Suit Ventilation cfm		12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
Suit/Cabin ΔP "H_2O		8	21	24.5	24.5	26	26	23	242	25	23.5	22	9	10	7.5	4.0
Tank Altitude Ft		SL	5K	10K	10K	10K	10K	24K	34K	34K	34K	34K	30K	20K	10K	6K
Tank Temp °F		77			75								80		83	81
Treadmill Start/Stop																
O_2 Consumption (L/min)																
CO_2 Production (L/min)																
Pulse Rate																
Blood Pressure																
Respiration Rate																
Body Temperature																
Comfort Level																
Remarks: Heat Ex. H_2O Out cc							230									
Test had to be cancelled.																220
Blood Pressure cuff would not work																

	Wt. Before Test	Wt. after Test	Time On Bottle
O_2 Bottle #1			
O_2 Bottle #2			
O_2 Bottle #3			

Garment Weight, gm
Before Test 389
After Test 432

ALTITUDE EQUIPMENT DIVISION
CALCULATED
RECORDED
DRAWN
CHECKED
APPROVED

PRESSURE SUIT VENTILATION

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

SS-101B-R
Page 90

Date 6-7, 1962

RUN NUMBER 28

TIME	DEW POINT °F IN	DEW POINT °F OUT	PRESS. ABS. "Hg A	SUIT TEMP °F IN	SUIT TEMP °F OUT
9:20	47	64	22.3	48	80
9:25	47.5	58	22.3	47	80
9:50	52	60	7.1	55	82
9:55	49.5	62	7.1	50	82
10:00	TANK DOWN TO 10,000 TO REPAIR GLOVE				
10:05					
10:15					
10:20					
10:25					
10:30					

Experiment No. 29
Test Subject Tom Dunne
Altitude 34,000 Ft
Treadmill Speed 2 mph

Suit Ventilation Rate 12 cfm
Dew Point Temperature 50°F
Suit Inlet Temperature 50°F

DATE June 8, 1962
BAR 29.83 "Hg A

Time	Strip Chart #	10:40	10:45	10:50	10:55	11:00	11:05	11:10	11:15	11:20	11:25
Water Tank (Chiller) °F	7	40	40	42	40	42	40	40	40	42	43
Saturation Tank °F	8	85	85	90	88	91	92	92	92	90	88
Heat Exchanger In °F	5	74	75	75	75	75	78	78	82	85	86
Heat Exchanger Out °F	16	48	51	49	49	50	51	49	50	50	50
Flow Rater In °F	4	82	82	85	85	86	88	88	88	87	86
Suit In °F	13	48	50	50	50	50	50	50	51	51	51
Dew Point, Suit In °F		47.5	49.5	49	49	49.5	50	50			52
Suit Out °F	14	85	85	85	86	86	86	85	84	83	83
Dew Point, Suit Out °F		58	60.5	65	66.5	69.5	70.5	65			67
Saturation Tank Pressure "Hg A.		12.5	12	12	12	12	12	13.5	19.5	27.5	33.0
Flowrate, Suit Ventilation cfm		12	12	12	12	12	12	12	12	12	12
Suit/Cabin ΔP "H_2O		7	7	7	7	7.5	7.0	6.8	6.5	5.0	0
Tank Altitude ft		34K	34K	34K	34K	34K	34K	34K	20K	9K	SL
Tank Temp °F		78				78	79			84	86
Treadmill Start/Stop							STOP				
O_2 Consumption (L/min)											
CO_2 Production (L/min)											
Pulse Rate											
Blood Pressure											
Respiration Rate											
Body Temperature											
Comfort Level											
Remarks:											
Heat Ex. H_2O out cc		85				95				110	
Suit to cabin ΔP in question											

	Wt. Before Test	Wt. after Test	Time On Bottle
O_2 Bottle #1			
O_2 Bottle #2			
O_2 Bottle #3			

Garment Weight, gm
Before Test 399
After Test 442

ALTITUDE EQUIPMENT DIVISION
CALCULATED
RECORDED
DRAWN
CHECKED
APPROVED

PRESSURE SUIT VENTILATION TEST

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

Experiment No. 29
Test Subject Tom Dunne
Altitude 34,000 ft
Treadmill Speed 2 mph

Suit Ventilation Rate 12 cfm (39%)
Dew Point Temperature 50°F
Suit Inlet Temperature 50°F

DATE June 8, 1962
BAR 29.83

Time	Strip Chart #	9:25	9:30	9:35	9:40	9:45	9:50	9:55	10:00	10:05	10:10	10:15	10:20	10:25	10:30	10:35
Water Tank (Chiller) °F	7	41	42	44	45	41	40	40	40	40	41	43	42	42	40	40
Saturation Tank °F	8	87	80	78	79	80	82	82	80	81	80	82	82	82	82	84
Heat Exchanger In °F	5	86	80	88	78	76	78	78	78	78	78	78	78	78	79	74
Heat Exchanger Out °F	16	48	50	51	49	48	48	48	51	50	50	52	50	49	49	48
Flow Rater In °F	4	86	80	78	78	78	78	78	78	80	80	78	80	80	80	80
Suit In °F	13	50	50	51	51	49	48	48	48	50	51	52	50	50	49	49
Dew Point, Suit In °F			49	51	49	48			47	48	49.0	50	48	47.5	46	46
Suit Out °F	14	84	84	82	82	83	80	80	82	81	82	84	82	84	84	85
Dew Point, Suit Out °F			60	57	58	57			58	55	57.5	60	57	57.5	57.5	55
Saturation Tank Pressure "Hg A.		32	23	24.8	24.8	24.8	20	13.5	10.5	10.4	11.5	10.4	10.4	10.6	10.5	11.0
Flowrate, Suit Ventilation cfm		12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
Suit/Cabin ΔP "H_2O		5	6.5	6.0	6.0	6.0	8	13	7.5	7.2	7.5	6.6	6.8	7.2	6.4	13
Tank Altitude ft		SL	10K	10K	10K	10K	15K	32K	34K	34K	34K	34K	34K	34K	34K	34K
Tank Temp °F		77	73	76	77									77		
Treadmill Start/Stop																START
O_2 Consumption (L/min)																
CO_2 Production (L/min)																
Pulse Rate																
Blood Pressure																
Respiration Rate																
Body Temperature																
Comfort Level																
Remarks:																
Heat Ex. H_2O Out cc		20			65									175		

	Wt. Before Test	Wt. after Test	Time On Bottle
O_2 Bottle #1			
O_2 Bottle #2			
O_2 Bottle #3			

Garment Weight, gm
Before Test 399
After Test 442

ALTITUDE EQUIPMENT DIVISION
CALCULATED
RECORDED
DRAWN
CHECKED
APPROVED

PRESSURE SUIT VENTILATION TEST

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

Date 6-8-62, 1962

RUN NUMBER 29

TIME	DEW POINT °F IN	DEW POINT °F OUT	PRESS. ABS. "Hg A	SUIT TEMP °F IN	SUIT TEMP °F OUT
9:30	49	60	20.9	50	81
9:35	51	57	20.7	52	82
9:40	49	58	21.0	50	82
9:45	48	57	21.0	49	81
10:00	47	58	7.0	50	82
10:05	48	55	7.0	49	82
10:10	49	57.5	7.0	50	83
10:15	50	60	7.0	52	83
10:20	48	57	7.0	48	84
10:25	47.5	57.5	7.0	48	84
10:30	46	57.5	7.0	48	84
10:35	46	55	7.0	48	85
10:40	47.5	58	7.0	50	84
10:45	49.5	60.5	7.1	52	85
10:50	49	65.0	7.1	50	86
10:55	49	66.5	7.0	49	86
11:00	49.5	69.5	7.0	50	87
11:05	50	70.5	7.0	51	87
11:10	50	65.	7.0	50	84
11:25	52	67	S.L.	52	83

Experiment No. 30
Test Subject Andre Kas
Altitude 34,000 ft
Treadmill Speed 2 mph

Suit Ventilation Rate 10 cfm (32.5%)
Dew Point Temperature 50°F
Suit Inlet Temperature 50°F

DATE June 8, 1962
BAR 29.82 "Hg A

Time	Strip Chart #	2:15	2:20	2:25	2:30	2:35	2:40	2:45	2:50	2:55	3:00	3:05	3:10	3:15	3:20	3:25
Water Tank (Chiller)	7	40	42	45		42	40	40	40	40	41	42	44	42	44	41
Saturation Tank	8	105	97	86		97	98	98	99	98	96	94	93	93	93	93
Heat Exchanger In	5	90	96	92	9	90	90	91	84	83	86	88	88	86	86	86
Heat Exchanger Out	16	50	56	51		50	49	49	49	49	49	50	50	50	49	49
Flow Rater In	4	98	97	92		92	94	95	94	94	92	94	90	90	89	88
Suit In	13	56	51	51.5		50	49	49	50	49	49	50	50	50	50	50
Dew Point, Suit In			50	50	50	48.5	48.5		47.5	46	47.5	49	49	49	49	48
Suit Out	14	90	88	88		88	88	86	86	86	87	87	87	87	86	88
Dew Point, Suit Out			65	61	64	62	60		54	50	53	58	54	61.5	67	72
Saturation Tank Pressure "Hg A.		31	25.5	25.8		24	27	18.5	13.0	13.5	10.0	10.0	10.0	10.0	10.0	10.2
Flowrate, Suit Ventilation cfm		10	10	10		10	10	10	10	10	10	10	10	10	10	10
Suit/Cabin ΔP "H_2O		6	3	3.5		4	4.5	9.0	4.2	4.5	4.5	3.5	4.5	4.5	4.3	4.8
Tank Altitude ft		2K	10K	10K		10K	10K	10K	34K	34K	34K	34K	34K	34K	34K	34K
Tank Temp °F		81			79°F			83				78				
Treadmill Start/Stop														START (3:13)		
O_2 Consumption (L/min)																
CO_2 Production (L/min)																
Pulse Rate																
Blood Pressure																
Respiration Rate																
Body Temperature																
Comfort Level																
Remarks: Heat Ex. H_2O Out cc		2cc						160				160				

	Wt. Before Test	Wt. after Test	Time On Bottle
O_2 Bottle #1			
O_2 Bottle #2			
O_2 Bottle #3			

Garment Weight, gm
Before Test .732
After Test .765

ALTITUDE EQUIPMENT DIVISION
CALCULATED
RECORDED
DRAWN
CHECKED
APPROVED

PRESSURE SUIT VENTILATION TEST

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

Experiment No. 30
Test Subject Andre Kas
Altitude 34,000 ft
Treadmill Speed 2 mph

Suit Ventilation Rate 10 cfm
Dew Point Temperature 50°F
Suit Inlet Temperature 50°F

(32.5%)

DATE June 8, 1962
BAR 29.82 "Hg A

Time	Strip Chart #	3:30	3:35	3:40	3:45	3:50	3:55
Water Tank (Chiller) °F	7	42	40	40	40	39	39
Saturation Tank °F	8	93	93	93	93	90	90
Heat Exchanger In °F	5	86	86	86	86	86	88
Heat Exchanger Out °F	16	50	49	50	48	49	49
Flow Rater In °F	4	89	89	90	90	88	88
Suit In °F	13	50	49	50	49	49	49
Dew Point, Suit In °F		48	48	47	46.5		46
Suit Out °F	14	90	89	90	87	86	87
Dew Point, Suit Out °F		71	78	78	75		74
Saturation Tank Pressure "Hg A.		10.0	10.0	10.3	10.3	20.0	32
Flowrate, Suit Ventilation cfm		10	10	10	10	10	10
Suit/Cabin ΔP "H_2O		5.0	5.0	5.0	5.2	3.0	2.0
Tank Altitude ft		34K	34K	34K	34K	14K	8L
Tank Temp °F		79			80	88	91
Treadmill Start/Stop					STOP		
O_2 Consumption (L/min)							
CO_2 Production (L/min)							
Pulse Rate							
Blood Pressure							
Respiration Rate							
Body Temperature							
Comfort Level							
Remarks:							
Heat Ex. H_2O Out cc		165					135

	Wt. Before Test	Wt. after Test	Time On Bottle
O_2 Bottle #1			
O_2 Bottle #2			
O_2 Bottle #3			

Garment Weight, gm
Before Test 732
After Test 765

ALTITUDE EQUIPMENT DIVISION
CALCULATED
RECORDED
DRAWN
CHECKED
APPROVED

PRESSURE SUIT VENTILATION TEST

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

Date 6-8-62, 1962

RUN NUMBER 30

TIME	DEW POINT °F IN	DEW POINT °F OUT	PRESS. ABS. "Hg A	SUIT TEMP °F IN	SUIT TEMP °F OUT
2:20	50	65	20.5	50	88
2:25	50.5	61	20.8	52	88
2:30	50	64	20.6	52	90
2:35	48.5	62	20.6	50	88
2:40	48.5	60	20.8	49	87
2:50	47.5	54	7.2	50	86
2:55	46	50	7.3	48	85
3:00	47.5	53	7.2	48	87
3:05	49	58	7.3	50	86
3:10	49	54	7.2	50	87
3:15	49	61.5	7.3	50	87
3:20	49	67	7.2	52	89
3:25	48	72	7.2	50	90
3:30	48	71	7.2	50	90
3:35	48	78	7.2	49	89
3:40	47	78	7.2	48	91
3:45	46.5	75	7.2	48	89
3:55	46	74	S.L.	48	86

Experiment No. 31
Test Subject Tom Dunne
Altitude 19,000 ft
Treadmill Speed 2 mph

Suit Ventilation Rate 4 cfm (10)
Dew Point Temperature 50°F
Suit Inlet Temperature 50°F

DAT June 11, 1962
BAR 29.92 "Hg A
100% O_2

Time	Strip Chart #	9:40	9:45	9:50	9:55	10:00	10:05	10:10	10:15	10:20	10:25	10:30	10:35	10:40	10:45	10:50
Water Tank (Chiller) °F	7	44	42	43	43	42	41	43	42	42	40	40	42	43	42	41
Saturation Tank °F	8	84	84	87	92	98	104	107	110	115	115	119	118	117	115	113
Heat Exchanger In °F	5	79	79	78	76	76	76	80	80	80	79	90	88	100	102	102
Heat Exchanger Out °F	16	49	48	48	48	49	44	48	49	52	50	50	49	49	50	49
Flow Rater In °F	4	80	82	82	85	88	94	100	104	98	110	114	115	114	114	112
Suit In °F	13	50	50	49	48	50	46	49	49	50	51	52	50	50	50	50
Dew Point, Suit In °F			37	39	40.5	40.0		41.0	41.0	44.5	45	43	42	43	43	42
Suit Out °F	14	86	86	86	85	87	87	86	88	80	80	80	80	90	90	91
Dew Point, Suit Out °F			62	63	62.5	60.5		63.5	58.0	62	63.5	63	60	72	75	78
Saturation Tank Pressure "Hg A		32.5	22	23.5	23.5	23.5	17.5	16.4	16.4	16.4	16.5	16.4	16.3	16.4	16.4	16.3
Flowrate, Suit Ventilation cfm		4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Suit/Cabin ΔP "H_2O		0	1	1	1	1	2	1.4	1.2	2.5	1.0	1.0	1.0	1.0	1.3	3.0
Tank Altitude ft		8L	10K	10K	10K	10K	17K	19K	19K	19K	19K	19K	19K	19K	19K	19K
Tank Temp °F		77	74				76			76			10:38 START			
Treadmill Start/Stop																
O_2 Consumption (L/min)																
CO_2 Production (L/min)																
Pulse Rate																
Blood Pressure																
Respiration Rate																
Body Temperature																
Comfort Level																
Remarks:																
Heat Ex. H_2O Out cc		20				25				20				45		

	Wt. Before Test	Wt. after Test	Time On Bottle
O_2 Bottle #1			
O_2 Bottle #2			
O_2 Bottle #3			

Garment Weight, gm
Before Test 402
After Test 555

ALTITUDE EQUIPMENT DIVISION
CALCULATED
RECORDED
DRAWN
CHECKED
APPROVED

PRESSURE SUIT VENTILATION TEST

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

Experiment No. 31
Test Subject Tom Dunne
Altitude 19,000 ft
Treadmill Speed 2 mph

Suit Ventilation Rate 4 cfm
Dew Point Temperature 50°F
Suit Inlet Temperature 50°F

DATE June 11, 1962
BAR 29.92 "Hg A =
100% O_2

Time	Strip Chart #	10:55	11:00	11:05	11:10	11:15	11:20	11:25
Water Tank (Chiller)	7	41	40	42	42	42	42	4
Saturation Tank	8	110	108	105	103	101	98	97
Heat Exchanger In	5	102	101	100	98	97	97	93
Heat Exchanger Out °F	16	49	47	49	50	52	51	49
Flow Rater In	4	108	104	103	100	99	97	94
Suit In	13	50	49	49	50	50	51	51
Dew Point, Suit In		41	41	43	43			43.5
Suit Out	14	91	91	92	92	91	90	92
Dew Point, Suit Out		63	82	85	86			84
Saturation Tank Pressure "Hg A		16.5	16.5	16.5	16.5	21.0	27.5	31.0
Flowrate, Suit Ventilation cfm	4	4	4	4	4	4	4	4
Suit/Cabin ΔP "H_2O	1.2	1.2	1.2	1.0	[illegible]	1.4	0.8	0.3
Tank Altitude ft		19K	19K	19K	19K	12K	4,500	SL
Tank Temp °F				78				82
Treadmill Start/Stop					11:08 870F			
O_2 Consumption (L/min)								
CO_2 Production (L/min)								
Pulse Rate								
Blood Pressure								
Respiration Rate								
Body Temperature								
Comfort Level								
Remarks: Heat Ex. H_2O Out cc				65				55

	Wt. Before Test	Wt. after Test	Time in Bottle
O_2 Bottle #1			
O_2 Bottle #2			
O_2 Bottle #3			

Garment Weight, gm
Before Test 408
After Test 555

ALTITUDE EQUIPMENT DIVISION
CALCULATED
RECORDED
DRAWN
CHECKED
APPROVED

AIRESEARCH MANUFACTURING CO
LOS ANGELES CALIFORNIA

Date 6-11-62, 1962

RUN NUMBER 31

TIME	DEW POINT °F IN	DEW POINT °F OUT	PRESS. ABS. in. Hg	SUIT TEMP °F IN	SUIT TEMP °F OUT
9:45	37	62	20.5	50	87
9:50	39	63	20.5	48	87
9:55	40.5	62.5	20.4	48	87
10:00	40.0	60.5	20.3	50	88
10:10	41.0	63.5	13.8	47	87
10:15	41.0	58	13.4	48	88
10:20	44.5	62	13.3	51	88
10:25	45	63.5	13.3	54	89
10:30	43	63	13.3	53	89
10:35	42	60	13.3	50	89
10:40	43	72	13.2	50	91
10:45	43	75	13.2	50	91
10:50	42	78	13.3	50	91
10:55	41	83	13.2	50	92
11:00	41	82	12.4	50	92
11:05	43	85	12.5	50	92
11:10	43	86	12.5	50	90
11:25	43.5	84	S.L.	54	90

Experiment No. 32
Test Subject Andre Kaz
Altitude 19,000 ft
Treadmill Speed 2 mph

Suit Ventilation Rate 4 cfm (15.)
Dew Point Temperature 50°F
Suit Inlet Temperature 50°F

DATE June 11, 1962
BAR 29.93

Time	Strip Chart #	1:40	1:45	1:50	1:55	2:00	2:05	2:10	2:15	2:20	2:25	2:30	2:35	2:40	2:45	2:50
Water Tank (Chiller) °F	7	43	45	42	42	40	41	44	41	40	42	41	41	44	45	45
Saturation Tank °F	8	85	80	78	79	79	82	84	89	94	97	101	103	105	107	105
Heat Exchanger In °F	5	79	80	80	78	78	79	78	76	76	78	80	828	85	90	92
Heat Exchanger Out °F	16	50	49	49	48	48	48	49	46	45	46	57	46	48	50	55
Flow Rater In °F	4	79	83	80	78	78	79	82	84	89	92	96	99	102	104	101
Suit In °F	13	62	54	51	50	49	49	50	50	48	48	50	50	52	52	52
Dew Point, Suit In °F			42	40	40	40	41	41	41	40	42	424	41	43	43	47
Suit Out	14	88	86	97	98	93	89	91	91	91	92	92	91	92	91	87
Dew Point, Suit Out			64	57	61	72	74	70	82	81	82	82	87	82	81	77
Saturation Tank Pressure "Hg A.		25	16	16	16.0	16.0	16.0	17.8	16.0	16.0	16.0	17.8	17.8	17.8	17.6	21.5
Flowrate, Suit Ventilation cfm		4	4	4	4	4	4	4	4	4	4	4	4	4	4	10
Suit/Cabin ΔP "H_2O		1.0	1.5	2.0	1.5	1.5	1.3	1.8	1.8	1.5	1.5	1.5	1.5	1.5	3.0	5.5
Tank Altitude		2000	19K	19K	19K	19K	19K	19K	19K	19K	19K	19K	19K	19K	19K	19K
Tank Temp °F		77		76				78			78°				80°	
Treadmill Start/Stop														STOP		
O_2 Consumption (L/min)																
CO_2 Production (L/min)																
Pulse Rate																
Blood Pressure																
Respiration Rate																
Body Temperature																
Comfort Level																
Remarks:																
Heat Ex. H_2O Out cc				30 cc			30cc									
											25 cc				50 cc	
2:47 increase flow cfm to 10-																

	Wt. Before Test	Wt. after Test	Time On Bottle
O_2 Bottle #1			
O_2 Bottle #2			
O_2 Bottle #3			

Garment Weight, gm
Before Test 403
After Test 457

ALTITUDE EQUIPMENT DIVISION
CALCULATED
RECORDED
DRAWN
CHECKED
APPROVED

PRESSURE SUIT VENTILATION TEST

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

Experiment No. 32

Test Subject Andre Kas

Altitude 19,000 ft.

Treadmill Speed 2 mph

Suit Ventilation Rate 4 cfm (15)

Dew Point Temperature 50°F

Suit Inlet Temperature 50°F

100% O_2

DAT June 11, 1962

BAR 29.93

Time		Strip Chart #	2:55	SL 3:00	
Water Tank (Chiller)	°F	7	44	44	
Saturation Tank	°F	8	102	106	
Heat Exchanger In	°F	5	92	91	
Heat Exchanger Out	°F	16	51	50	
Flow Rater In	°F	4	99	102	
Suit In	°F	13	54	51	
Dew Point, Suit In	°F		47	43	
Suit Out	°F	14	87	90	
Dew Point, Suit Out	°F		71	76	
Saturation Tank Pressure "Hg A			21.8	32.5	
Flowrate, Suit Ventilation cfm			4	4	
Suit/Cabin ΔP "H_2O			.8	.8	
Tank Altitude ft			9K	SL	SL
Tank Temp °F			80°	84°	86°
Treadmill Start/Stop					
O_2 Consumption (L/min)					
CO_2 Production (L/min)					
Pulse Rate					
Blood Pressure					
Respiration Rate					
Body Temperature					
Comfort Level					
Remarks:					
Heat Ex. H_2O Out cc			90 cc		

	Wt. Before Test	Wt. after Test	Time On Bottle
O_2 Bottle #1			
O_2 Bottle #2			
O_2 Bottle #3			

Garment Weight gm

Before Test 403

After Test 457

ALTITUDE EQUIPMENT DIVISION

CALCULATED

RECORDED

DRAWN

CHECKED

APPROVED

PRESSURE SUIT VENTILATION TEST

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

Date 6-11-62, 1962

RUN NUMBER 32

TIME	DEW POINT °F IN	DEW POINT °F OUT	PRESS. ABS. in. Hg	SUIT TEMP °F IN	SUIT TEMP °F OUT
1:45	42	64	13.7	54	86
1:50	40	57	13.8	50	88
1:55	40	61	13.8	50	88
2:00	40	72	13.8	48	89
2:05	41	74	14.0	49	89
2:10	41	70	14.1	49	91
2:15	41	82	14.0	48	91
2:20	40	81	14.0	48	92
2:25	42	82	14.0	48	92
2:30	42	82	14.1	50	92
2:35	41	87	13.9	50	91
2:40	42	87	13.9	50	91
2:45	43	81	13.9	54	92
2:50	47	77	14.0	53	87
2:52	47	71	14.0	52	86
3:00	43	76	S.L.	52	91

Experiment No. 33
Test Subject Tom Dunne
Altitude 19,000 ft
Treadmill Speed 2 mph

Suit Ventilation Rate 6 cfm (23%)
Dew Point Temperature 50°F
Suit Inlet Temperature 50°F

DATE June 12, 1962
BAR 29.84

Time	Strip Chart #	9:40	9:45	9:50	9:55	10:00	10:05	10:10	10:15	10:20	10:25	10:30	10:35	10:40	10:45	10:50
Water Tank (Chiller) °F	37	42	42	42	42	42	40	41	42	42	40	43	43	42	42	42
Saturation Tank °F	8	84	86	93	95	95	95	96	98	98	99	100	100	100	100	100
Heat Exchanger In °F	5	88	88	88	88	88	88	88	89	90	92	90	92	92	93	93
Heat Exchanger Out °F	16	49	49	49	50	50	49	48	50	50	50	50	50	50	49	49
Reheater Out °F	4	91	91	90	90	91	91	95	95	96	96	96	96	96	96	97
Suit In °F	13	50	50	49	50	50	50	48	49	50	50	50	50	50	50	50
Dew Point, Suit In °F				44	44.5	44	42	44	46	48	47.5	48.5	48.5	48.5	47	48
Suit Out °F	14	86	86	82	84	86	86	86	86	87	86	87	88	88	89	90
Dew Point, Suit Out °F				55	56	55	54	54	60	63	60	67.5	65	67	73	74
Saturation Tank Pressure "Hg A.		31.8	20	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.6	17.6	17.7	17.7	17.7
Flowrate, Suit Ventilation cfm		6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Suit/Cabin ΔP "H_2O		1.5	2.5	2.5	2.5	2.5	2.5	2.5	3.0	2.8	2.5	2.2	2.5	2.5	2.5	2.5
Tank Altitude ft		SL	7000	19K	19K	19K	19K	19K	19K	19K	19K	19K	19K	19K	19K	19K
Tank Temp °F		77	74				76			77			78			
Treadmill Start/Stop											START					
O_2 Consumption (L/min)																
CO_2 Production (L/min)																
Pulse Rate																
Blood Pressure																
Respiration Rate																
Body Temperature																
Comfort Level																
Remarks:																
Heat Ex. H_2O Out cc		50 cc					90cc						135 cc			
Inlet Gas 50% N_2 50% O_2																

	Wt. Before Test	Wt. after Test	Time On Bottle
O_2 Bottle #1			
O_2 Bottle #2			
O_2 Bottle #3			

Garment Weight, gm
Before Test 395
After Test 468

ALTITUDE EQUIPMENT DIVISION
CALCULATED
RECORDED
DRAWN
CHECKED
APPROVED

PRESSURE SUIT VENTILATION TEST

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

Experiment No. 33
Test Subject Tom Dunne
Altitude 19,000 ft
Treadmill Speed 2 mph

Suit Ventilation Rate 6 cfm (23%)
Dew Point Temperature 50°F
Suit Inlet Temperature 50°F

DATE June 12, 1962
BAR 29.84 in.

Time	Strip Chart #	10:55	11:00	11:05	11:10
Water Tank (Chiller) °F	7	42	42	40	40
Saturation Tank °F	8'	100	100	100	100
Heat Exchanger In °F	5	93	93	92	93
Heat Exchanger Out °F	16	49	49	49	49
Reheater Out °F	4	96	96	95	95
Suit In °F	13	49	50	49	50
Dew Point, Suit In °F		48	47.5		49
Suit Out °F	14	90	90	87	87
Dew Point, Suit Out °F		75	71.5		72
Saturation Tank Pressure "Hg A.		17.5	17.5	27	31.5
Flowrate, Suit Ventilation cfm		6	6	6	6
Suit/Cabin ΔP' "H_2O		2.5	2.5	2.5	0
Tank Altitude ft		19K	19K	5K	8K
Tank Temp °F			80		85
Treadmill Start/Stop		STOP			
O_2 Consumption (L/min)					
CO_2 Production (L/min)					
Pulse Rate					
Blood Pressure					
Respiration Rate					
Body Temperature					
Comfort Level					

Remarks:
Heat Ex. H_2O Out cc 24
Inlet Gas 50% N_2 50% O_2

	Wt. Before Test	Wt. after Test	Time On Bottle
O_2 Bottle #1			
O_2 Bottle #2			
O_2 Bottle #3			

Garment Weight
Before Test 395
After Test 468

ALTITUDE EQUIPMENT DIVISION		
CALCULATED		
RECORDED		
DRAWN		
CHECKED		
APPROVED		

PRESSURE SUIT VENTILATION TEST

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

Date 6-12-62, 1962

RUN NUMBER 33

TIME	DEW POINT °F IN	DEW POINT °F OUT	PRESS. ABS. in. Hg	SUIT TEMP °F IN	SUIT TEMP °F OUT
9:50	44	55	13.6	49	83
9:55	44.5	56	13.5	49	85
10:00	44	55	13.5	49	85
10:05	42	54	13.5	48	86
10:10	44	54	13.5	47	86
10:15	46	60	13.5	48	86
10:20	48	63	13.5	50	86
10:25	47.5	60	13.5	50	88
10:30	48.5	67.5	13.6	50	88
10:35	48.5	65.0	13.5	50	89
10:40	48.5	67.0	13.5	52	89
10:45	47	73	13.5	50	89
10:50	48	74	13.5	49	90
10:55	48	75	13.5	49	90
11:00	47.5	71.5	13.5	48	89
11:	49	72.0	S.L.	49	88

Experiment No. 34
Test Subject Andre Kaz
Altitude 19,000 ft
Treadmill Speed 2 mph

Suit Ventilation Rate 6 cfm
Dew Point Temperature 50°F
Suit Inlet Temperature 50°F

DATE June 12, 1962
BAR 29.84

Time	Strip Chart #	1:25	1:30	1:35	1:40	1:45	1:50	1:55	2:00	2:05	2:10	2:15	2:20	2:25	2:30	2:35
Water Tank (Chiller) °F	7	44	42	43	40	40	40	42	44	42	41	40	40	39	38	38
Saturation Tank °F	8	110	110	103	104	100.5	100	102	102	102	102	102	102	102	102	102
Heat Exchanger In °F	5	100	98	96	96	96	96	96	95	95	95	95	96	96	96	96
Heat Exchanger Out °F	16	49	50	49	49	49	49	50	50	50	50	50	49	49	49	49
Reheater Out °F	4	104	95	102	102	100	98	98	98	98	98	98	98	98	98	98
Suit In °F	13	50	50	50	49	49	49	50	50	50	50	50	49	49	49	49
Dew Point, Suit In °F			47.5		47.5	47.5	48	50	50	50	50	49	48	48	48	
Suit Out °F	14	86	86	86	86	88	87	87	87	90	90	90	92	90	90	91
Dew Point, Suit Out °F			57		58	58	57	60	63	65	65	66	68	72	70	
Saturation Tank Pressure "Hg A		35	29.5	17.0	17.0	16.0	16.0	16.0	16.0	16.0	16.2	16.2	16.2	16.2	16.2	16.2
Flowrate, Suit Ventilation cfm		6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Suit/Cabin ΔP "H_2O		1.5	3.0	2.0	2.0	2.0	2.0	3.0	2.0	2.0	2.0	2.0	2.0	2.2	2.2	2.2
Tank Altitude ft		8L	10K	19K	19K	19K	19K	19K	19K	19K	19K	19K	19K	19K	19K	19K
Tank Temp °F		78				78							79			
Treadmill Start/Stop															STOP	
O_2 Consumption (L/min)																
CO_2 Production (L/min)																
Pulse Rate																
Blood Pressure																
Respiration Rate																
Body Temperature																
Comfort Level																
Remarks:																
Heat Ex. H_2O Out cc		25				130							155			
Inlet Gas 50% N_2 50% O_2																

	Wt. Before Test	Wt. after Test	Time On Bottle
O_2 Bottle #1			
O_2 Bottle #2			
O_2 Bottle #3			

Garment Weight, gr
Before Test 346
After Test 320

ALTITUDE EQUIPMENT DIVISION
CALCULATED
RECORDED
DRAWN
CHECKED
APPROVED

PRESSURE SUIT VENTILATION TEST

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

SS-1018-R

Experiment No. 34
Test Subject Andre Kas
Altitude 19,000
Treadmill Speed 2 mph

Suit Ventilation Rate 6 cfm
Dew Point Temperature 50°F
Suit Inlet Temperature 50°F

DATE June 12, 1962
BAR 29.84

Time	Strip Chart #	2:40	2:43
Water Tank (Chiller) °F	7	42	42
Saturation Tank °F	8	103	103
Heat Exchanger In °F	5	96	96
Heat Exchanger Out °F	16	49	49
Reheater Out °F	4	98	98
Suit In °F	13	49	49
Dew Point, Suit In °F			49
Suit Out °F	14	90	90
Dew Point, Suit Out °F			70
Saturation Tank Pressure "Hg A.		25	
Flowrate, Suit Ventilation cfm		6	
Suit/Cabin ΔP "H_2O		1	
Tank Altitude ft		5 K	5K
Tank Temp °F		85	87
Treadmill Start/Stop			
O_2 Consumption (L/min)			
CO_2 Production (L/min)			
Pulse Rate			
Blood Pressure			
Respiration Rate			
Body Temperature			
Comfort Level			
Remarks:			
Heat Ex. H_2O Out °F			105
Inlet Gas 50% N_2 50% O_2			

	Wt. Before Test	Wt. after Test	Time On Bottle
O_2 Bottle #1			
O_2 Bottle #2			
O_2 Bottle #3			

Garment Weight, gm
Before Test 396
After Test 428

ALTITUDE EQUIPMENT DIVISION		
CALCULATED		
RECORDED		
DRAWN		
CHECKED		
APPROVED		

PRESSURE SUIT VENTILATION TEST

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

Date 6-12-62, 1962

RUN NUMBER 34

TIME	DEW POINT °F IN	DEW POINT °F OUT	PRESS. ABS. in. Hg	SUIT TEMP °F IN	SUIT TEMP °F OUT
1:35	47.5	57	14.0	50	86
1:40	47.5	59.5	14.1	49	87
1:45	47.5	58	14.0	49	88
1:50	48	57	14.0	48	88
1:55	50	50	14.0	50	88
2:00	50	63	14.0	50	88
2:05	50	65	14.0	50	90
2:10	50	65	14.0	50	90
2:15	49	66	14.0	49	90
2:20	48	68	14.0	48	91
2:25	48	72	14.0	48	92
2:30	48	70	14.0	49	90
2:35	48	71	14.0	50	90
2:4	49	70	S.L.	50	91

Experiment No. 35
Test Subject, Tom Dunne
Altitude 19,000 ft
Treadmill Speed 2 mph

Suit Ventilation Rate 8 cfm = (30%)
Dew Point Temperature 50°F
Suit Inlet Temperature 50°F

DATE June 13, 1962
BAR 29.82

Time	Strip Chart #	10:35	10:40	10:45	10:50	10:55	11:00	11:05	11:10	11:15	11:20	11:25	11:30	11:35	11:40	11:45
Water Tank (Chiller) °F	7	37	42	42	41	40	40	40	42	42	42	40	40	42	42	42
Saturation Tank °F	8	89	88	80	80	80	81	82	84	90	90	90	91	92	95	95
Heat Exchanger In °F	5	86	86	86	88	88	87	78	78	82	80	80	80	82	83	84
Heat Exchanger Out °F	16	53	50	50	49	46	49	50	50	50	50	49	49	49	50	50
Flow Rater In °F	4	86	86	86	88	88	88	82	80	88	86	88	90	90	90	92
Suit In °F	13	54	50	50	50	50	50	50	50	52	50	49	49	49	50	50
Dew Point, Suit In °F			47.5	47	45	45	46.5	48	47	47	46	44	45	47	48	
Suit Out °F	14	87	85	85	84	83	84	84	85	88	88	88	89	91	91	88
Dew Point, Suit Out °F			58	59	55	55	54	57	61	61.5	66	69	68	71	71	
Saturation Tank Pressure "Hg A.		31	17.3	17.5	17.5	17.6	17.6	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	24.0
Flowrate, Suit Ventilation cfm		8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
Suit/Cabin ΔP "H_2O		2.5	4.0	4.3	4.2	4.0	3.8	3.6	3.8	4.0	3.8	4.0	4.0	3.5	3.5	3.5
Tank Altitude ft		SL	19K	19K	19K	19K	19K	19K	19K	19K	19K	19K	19K	19K	19K	10K
Tank Temp °F		78					80			82	84				82	85
Treadmill Start/Stop															STOP	
O_2 Consumption (L/min)																
CO_2 Production (L/min)																
Pulse Rate																
Blood Pressure																
Respiration Rate																
Body Temperature																
Comfort Level																
Remarks:																
Heat Ex. H_2O Out CC		175 cc					180 cc									
Changed Converter											116			49		
11:15																

	Wt. Before Test	Wt. after Test	Time On Bottle
O_2 Bottle #1			
O_2 Bottle #2			
O_2 Bottle #3			

Garment Weight, gm
Before Test 401
After Test

ALTITUDE EQUIPMENT DIVISION		
CALCULATED		
RECORDED		
DRAWN		
CHECKED		
APPROVED		

PRESSURE SUIT VENTILATION TEST

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

Experiment No. 35
Test Subject Tom Dunne
Altitude 19,000 ft
Treadmill Speed 2 mph

Suit Ventilation Rate 8 cfm (30%)
Dew Point Temperature 50°F
Suit Inlet Temperature 50°F

DATE June 13, 1962
BAR 29.82

Time	Strip Chart #	11:50
Water Tank (Chiller) °F	7	40
Saturation Tank °F	80	98
Heat Exchanger In °F	5	85
Heat Exchanger Out °F	16	50
Reheater Out °F	4	96
Suit In °F	13	50
Dew Point, Suit In °F		50
Suit Out °F	14	85
Dew Point, Suit Out °F		87
Saturation Tank Pressure "Hg A.		33.5
Flowrate, Suit Ventilation cfm		8
Suit/Cabin ΔP "H_2O		2.5
Tank Altitude ft		81
Tank Temp °F		88
Treadmill Start/Stop		
O_2 Consumption (L/min)		
CO_2 Production (L/min)		
Pulse Rate		
Blood Pressure		
Respiration Rate		
Body Temperature		
Comfort Level		

Remarks:
Heat Ex. H_2O Out cc

	Wt. Before Test	Wt. after Test	Time On Bottle
O_2 Bottle #1			
O_2 Bottle #2			
O_2 Bottle #3			

Garment Weight, gm
Before Test 401
After Test

ALTITUDE EQUIPMENT DIVISION		
CALCULATED		
RECORDED		
DRAWN		
CHECKED		
APPROVED		

PRESSURE SUIT VENTILATION TEST

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

Date 6-13-62, 1962

RUN NUMBER 35

TIME	DEW POINT °F IN	DEW POINT °F OUT	PRESS. ABS. in. Hg	SUIT TEMP °F IN	SUIT TEMP °F OUT
10:40	47.5	58	14.3	51	82
10:45	47	59	14.0	50	83
10:50	45	55	14.0	48	83
10:55	45	55	14.0	48	83
11:00	46.5	54	14.0	50	84
11:05	48	57	14.0	50	84
11:10	47	61	13.9	50	84
11:15	47	61.5	13.9	50	86
11:20	46	66	13.9	50	90
11:25	44	68	13.8	48	87
11:30	45	68	13.9	48	87
11:35	47	71	13.9	49	87
11:40	48	71	13.9	50	86
11:50	48	70	S.L.	50	87

Experiment No. 36
Test Subject Andre Kas
Altitude 19,000 ft
Treadmill Speed 2 mph

Suit Ventilation Rate 8 cfm (30%)
Dew Point Temperature 50°F
Suit Inlet Temperature 50°F

DATE June 13, 1962
BAR 29.83 in.

Time	Strip Chart #	1:45	1:50	1:55	2:00	2:05	2:10	2:15	2:20	2:25	2:30	2:35	2:40	2:45	2:50	2:55
Water Tank (Chiller) °F	7	46	48	45	45	43	45	42	41	40	41	43	45	43	43	44
Saturation Tank °F	8	109	106	100	97	97	98	100	101	103	106	104	100	97	95	94
Heat Exchanger In °F	5	99	99	92	89	86	85	85	84	81	98	89	95	95	91	92
Heat Exchanger Out °F	16	54	55	55	51	50	50	50	47	46	46	50	55	51	50	50
Reheater Out °F	4	108	105	100	95	94	95	98	98	100	101	101	100	95	95	93
Suit In °F	13	52	54	53	52	50	50	51	48	48	48	49	52	52	51	50
Dew Point, Suit In °F				84	50	49	48	46	44	44	44	47	49	48.5	47	47.5
Suit Out °F	14	91	87	87	89	88	89	88	89	88	89	90	91	91	89	90
Dew Point, Suit Out °F				64	60	60	59	58	60	65	65	73	73	75	72	73
Saturation Tank Pressure "Hg A.			23.2	21.5	21.8	21.8	21.8	21.8	17.8	0.0	0.0	19.5	18.5	18.5	18.5	20.0
Flowrate, Suit Ventilation cfm		8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
Suit/Cabin ΔP "H_2O			4.0	3.8	3.8	4.1	3.5	4.5	4.5	3.0	3.0	3.0	3.0	3.0	3.0	2.5
Tank Altitude ft			19K	19K	19K	19K	19K	19K	19K	19K	19K	19K	19K	19K	19K	10K
Tank Temp. °F		80°	73°	73°				79°			80°	80°		81°		83°
Treadmill Start/Stop																STOP
O_2 Consumption (L/min)																
CO_2 Production (L/min)																
Pulse Rate																
Blood Pressure																
Respiration Rate																
Body Temperature																
Comfort Level																
Remarks:																
Heat Ex. H_2O Out cc				80 cc				135 cc				110 cc		45cc		50cc

	Wt. Before Test	Wt. after Test	Time On Bottle
O_2 Bottle #1			
O_2 Bottle #2			
O_2 Bottle #3			

Garment Weight, gm
Before Test 392
After Test 815

ALTITUDE EQUIPMENT DIVISION

CALCULATED		
RECORDED		
DRAWN		
CHECKED		
APPROVED		

PRESSURE SUIT VENTILATION T ST

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

SS-1018-R
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Experiment No. 36
Test Subject Andre Kaz
Altitude 19K ft
Treadmill Speed 2 mph

Suit Ventilation Rate 8 cfm (30%)
Dew Point Temperature 50°F
Suit Inlet Temperature 50°F

DATE June 13, 1962
BAR 29.83 in. Hg

Time	Strip Chart #	3:00
Water Tank (Chiller) °F	7	41
Saturation Tank °F	8	94
Heat Exchanger In °F	5	90
Heat Exchanger Out °F	16	48
Reheater Out °F	4	93
Suit In °F	13	50
Dew Point, Suit In °F		47
Suit Out °F	14	90
Dew Point, Suit Out °F		70
Saturation Tank Pressure "Hg A.		31.0
Flowrate, Suit Ventilation cfm		0.0
Suit/Cabin ΔP "H_2O		0.0
Tank Altitude ft	5K	8L
Tank Temp °F	88	88
Treadmill Start/Stop		
O_2 Consumption (L/min)		
CO_2 Production (L/min)		
Pulse Rate		
Blood Pressure		
Respiration Rate		
Body Temperature		
Comfort Level		
Remarks: Heat Ex. H_2O Out cc		30cc

	Wt. Before Test	Wt. after Test	Time On Bottle
O_2 Bottle #1			
O_2 Bottle #2			
O_2 Bottle #3			

Garment Weight, gm
Before Test 392
After Test 415

ALTITUDE EQUIPMENT DIVISION		
CALCULATED		
RECORDED		
DRAWN		
CHECKED		
APPROVED		

PRESSURE SUIT VENTILATION TEST

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

SS-1018-R

Date 6-13-62, 1962

RUN NUMBER 36

TIME	DEW POINT °F IN	DEW POINT °F OUT	PRESS. ABS. in. Hg	SUIT TEMP °F IN	SUIT TEMP °F OUT
1:55	54	64	14.0	54	87
2:00	50	60	14.0	52	89
2:05	49	60	14.0	50	88
2:10	48	59	14.0	50	89
2:15	46	58	14.0	50	87
2:20	44	60	14.0	49	88
2:25	44	65	14.0	48	88
2:30	44	65	14.0	48	88
2:35	47	73	14.0	48	90
2:40	49	73	14.0	52	90
2:45	48.5	75	14.0	50	91
2:50	47	72	14.0	50	89
2:55	47.5	73	14.0	50	90
3:00	47.0	70	14.0	48	89

Experiment No. 37
Test Subject Tom Dunne
Altitude 19,000 ft
Treadmill Speed 2 mph

Suit Ventilation Rate 10 cfm (398)
Dew Point Temperature 50°F
Suit Inlet Temperature 50°F

DATE June 14, 1962
BAR 29.81 in. Hg

Time	Strip Chart #	9:20	9:25	9:30	9:35	9:40	9:45	9:50	9:55	10:00	10:05	10:10	10:15	10:20	10:25	10:30
Water Tank (Chiller) °F	7	42	42	42	43	43	42	42	40	42	43	46	46	43	45	42
Saturation Tank °F	8	89	88	88	88	90	92	93	96	97	98	100	100	101	104	106
Heat Exchanger In °F	5	86	86	84	84	83	83	83	86	88	88	90	92	92	95	95
Heat Exchanger Out °F	16	50	50	49	50	50	50	50	50	50	50	52	52	52	50	51
Reheater Out °F	4	88	88	86	86	87	90	90	93	97	98	94	100	100	101	102
Suit In °F	13	50	50	49	49	50	49	50	50	50	51	50	52	52	52	51
Dew Point, Suit In °F		47	45	45.5	46.5	46.5	47	47	46	47	48	50	50.5	50.5		
Suit Out °F	14	82	80	80	82	82	82	82	82	83	83	85	85	85	84	84
Dew Point, Suit Out °F		54	54	55.5	56	55	55	57.5	56	61.5	65	68	67	64		
Saturation Tank Pressure "Hg A.		18	18	19.8	19.8	18.0	18.0	19.8	18.0	18.0	18.0	18.0	18.0	20.5	25.5	24.5
Flowrate, Suit Ventilation cfm		10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Suit/Cabin ΔP "H_2O		8.5	6.5	7.5	6.5	7.0	6.0	6.0	7.2	7.5	7.0	7.0	7.5	9.0	6.0	5.5
Tank Altitude ft		19K	19K	19K	19K	19K	19K	19K	19K	19K	19K	19K	19K	10K	10K	10K
Tank Temp °F		69		76			77					78				
Treadmill Start/Stop								START						STOP		
O_2 Consumption (L/min)																
CO_2 Production (L/min)																
Pulse Rate																
Blood Pressure																
Respiration Rate																
Body Temperature																
Comfort Level																
Remarks:																
Heat Ex. H_2O Out cc		250					130					140				

	Wt. Before Test	Wt. after Test	Time On Bottle
O_2 Bottle #1			
O_2 Bottle #2			
O_2 Bottle #3			

Garment Weight, gm
Before Test 398
After Test 424

ALTITUDE EQUIPMENT DIVISION
CALCULATED
RECORDED
DRAWN
CHECKED
APPROVED

PRESSURE SUIT VENTILATION TEST

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

Experiment No. 37
Test Subject Tom Dunne
Altitude 19,000 ft
Treadmill Speed 2 mph

Suit Ventilation Rate 10 cfm
Dew Point Temperature 50°F
Suit Inlet Temperature 50°F

DATE June 14, 1962
BAR 29.81 in. Hg

Time	Strip Chart #	10:35	10:40	10:45
Water Tank (Chiller) °F	7	43	40	42
Saturation Tank °F	8	107	108	108
Heat Exchanger In °F	5	96	100	100
Heat Exchanger Out °F	16	50	51	50
Reheater Out °F	4	104	107	106
Suit In °F	13	50	51	51
Dew Point, Suit In °F				50
Suit Out °F	14	83	82	81
Dew Point, Suit Out °F				60
Saturation Tank Pressure "Hg A.		26.6	30.0	32
Flowrate, Suit Ventilation cfm		10	10	10
Suit/Cabin ΔP "H_2O		5.2	4.5	4.0
Tank Altitude ft		8.5	3K	800
Tank Temp °F			81	
Treadmill Start/Stop				
O_2 Consumption (L/min)				
CO_2 Production (L/min)				
Pulse Rate				
Blood Pressure				
Respiration Rate				
Body Temperature				
Comfort Level				
Remarks:				
Heat Ex. H_2O Out cc			23°	

	Wt. Before Test	Wt. after Test	Time On Bottle
O_2 Bottle #1			
O_2 Bottle #2			
O_2 Bottle #3			

Garment Weight, gm
Before Test 398
After Test 424

ALTITUDE EQUIPMENT DIVISION		
CALCULATED		
RECORDED		
DRAWN		
CHECKED		
APPROVED		

PRESSURE SUIT VENTILATION TEST

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

SS-1018-R

Date 6-13-62, 1962

RUN NUMBER 37

TIME	DEW POINT °F IN	DEW POINT °F OUT	PRESS. ABS. in. Hg	SUIT TEMP °F IN	SUIT TEMP °F OUT
9:20	47.0	54.0	14.1	50	81
9:25	45.0	54.0	14.1	50	81
9:30	45.5	55.5	14.1	48	82
9:35	46.0	56.5	14.1	48	82
9:40	46.5	55.0	14.1	49	82
9:45	47.0	55.0	14.1	50	81
9:50	47.0	57.5	14.1	49	82
9:55	46.0	56.0	14.1	50	82
10:00	47.0	61.5	14.1	50	83
10:05	48.0	65.0	14.1	50	84
10:10	50.0	68.0	14.1	52	85
10:15	50.5	67.0	14.1	52	86
10:20	50.5	64	14.1	52	86
10:45	50	66	S.L.	50	82

Experiment No. 38
Test Subject AndréKas
Altitude 19K ft
Treadmill Speed 2 mph

Suit Ventilation Rate 10 cfm
Dew Point Temperature 50°F
Suit Inlet Temperature 50°F

DATE June 14, 1962
BAR 29.82 in. Hg

Time	Strip Chart #	1:45	1:50	1:55	2:00	2:05	2:10	2:15	2:20	2:25	2:30	2:35	2:40	2:45	2:50	2:55
Water Tank (Chiller) °F	7	42	44	42	43	42	42	42	41	41	44	45	47	43	45	44
Saturation Tank °F	8	102	99	96	95	96	98	100	100	101	101	102	100	95	91	89
Heat Exchanger In °F	5	99	97	98	90	89	91	98	93	94	95	96	96	95	91	89
Heat Exchanger Out °F	16	82	56	53	53	50	51	50	50	51	54	54	54	53	52	53
Reheater Out °F	4	100	97	96	95	95	96	98	98	98	99	100	98	95	91	89
Suit In °F	13	75	57	54	51	50	50	50	50	51	52	53	53	52	51	51
Dew Point, Suit In °F		-	51	50	48	48	47	46	47.5	47	48	49.5	50.5	51	51	49.5
Suit Out °F	14	91	89	88	86	86	86	86	89	86	87	87	88	87	88	87
Dew Point, Suit Out °F		-	67	62	60	59	56	57	61	62	69	72.5	75	75	75	73
Saturation Tank Pressure "Hg A		26.5	18.8	18.8	18.8	17.2	17.2	17.2	17.2	17.2	17.4	17.4	17.4	17.4	17.4	21.0
Flowrate, Suit Ventilation cfm	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Suit/Cabin ΔP "H_2O		4.8	6.0	6.0	6.0	5.5	5.2	5.0	5.2	5.0	5.0	5.0	5.0	5.0	5.2	4.0
Tank Altitude ft		20K	19K	19K	19K	19K	19K	19K	19K	19K	19K	19K	19K	19K	19K	12K
Tank Temp °F		74				79									81°	
Treadmill Start/Stop									START	-	-	-	-	-	STOP	
O_2 Consumption (L/min)																
CO_2 Production (L/min)																
Pulse Rate																
Blood Pressure																
Respiration Rate																
Body Temperature																
Comfort Level																
Remarks:																
Heat Ex. H_2O Out cc	10cc					195		92 cc				210 cc				

	Wt. Before Test	Wt. after Test	Time On Bottle
O_2 Bottle #1			
O_2 Bottle #2			
O_2 Bottle #3			

Garment Weight, gm
Before Test 392
After Test 410

ALTITUDE EQUIPMENT DIVISION		
CALCULATED		
RECORDED		
DRAWN		
CHECKED		
APPROVED		

PRESSURE SUIT VENTILATION TEST

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

Experiment No. 38
Test Subject André Kaz
Altitude 19K ft
Treadmill Speed 2 mph

Suit Ventilation Rate 10 cfm
Dew Point Temperature 50° F
Suit Inlet Temperature 50°F
SL

DATE June 14, 1962
BAR 29.82 in.

Time	Strip Chart 2:57	
	#	
Water Tank (Chiller) °F	7	
Saturation Tank °F	8	
Heat Exchanger In °F	5	
Heat Exchanger Out °F	16	
Reheater Out °F	4	
Suit In °F	13	52
Dew Point, Suit In °F		49
Suit Out °F	14	
Dew Point, Suit Out °F		71
Saturation Tank Pressure "Hg. A.		
Flowrate, Suit Ventilation cfm		
Suit/Cabin ΔP "H_2O		
Tank Altitude ft		
Tank Temp Fahrenheit		
Treadmill Start/Stop		
O_2 Consumption (L/min)		
CO_2 Production (L/min).		
Pulse Rate		
Blood Pressure		
Respiration Rate		
Body Temperature		
Comfort Level		

Remarks:
Heat Ex. H_2O Out 66

	Wt. Before Test	Wt. after Test	Time On Bottle
O_2 Bottle #1			
O_2 Bottle #2			
O_2 Bottle #3			

Garment Weight, gm.
Before Test 332
After Test 410

ALTITUDE EQUIPMENT DIVISION		
CALCULATED		
RECORDED		
DRAWN		
CHECKED		
APPROVED		

PRESSURE SUIT VENTILATION TEST

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

Date 6-14-62, 1962

RUN NUMBER 38

TIME	DEW POINT °F IN	DEW POINT °F OUT	PRESS. ABS. in. Hg	SUIT TEMP °F IN	SUIT TEMP °F OUT
1:50	51.0	67.0	14.0	56	89
1:55	50.0	62.0	14.0	54	87
2:00	48.0	60.0	14.0	52	87
2:05	48.0	59.0	14.0	50	86
2:10	47.0	56.0	14.0	50	86
2:15	46.0	57.0	14.1	50	86
2:20	47.5	61.0	14.0	50	86
2:25	47.0	62.0	14.0	50	86
2:30	48.0	69.0	14.0	50	87
2:35	49.5	72.5	14.0	54	88
2:40	50.5	75.0	14.0	52	87
2:45	51.0	75.0	14.0	52	87
2:50	49.5	75.0	14.0	52	90
2:53	49.5	73.0	14.0	52	89
2:57	49.0	71.0	S.L.	52	88

Experiment No. 39
Test Subject André Kas
Altitude 34 K ft
Treadmill Speed 2 mph

Suit Ventilation Rate 12 cfm (40%)
Dew Point Temperature 50°F
Suit Inlet Temperature 50°F

DATE June 15, 1962
BAR 29.82

Time	Strip Chart #	2:45	2:50	2:55	3:00	3:05	3:08				S.D. 3:17
Water Tank (Chiller) °F	1	43	43	46	45	45	45				43
Saturation Tank °F	2	101	101	101	101	101	101				106
Heat Exchanger In °F	3	89	89	90	89	89	90				93
Heat Exchanger Out °F	4	54	55	54	54	55	54				53
Flow Rater In °F	5	100	100	100	100	100	100				102
Suit In °F	6	53	54	54	53	53	53				53
Dew Point, Suit In °F		49.5	49.0	49.0	49.5	49.0	49.0				49.5
Suit Out °F	7	86	86	87	86	87	87				86
Dew Point, Suit Out °F		56.0	55.5	58.0	58.0	61.0	60.0				60.0
Saturation Tank Pressure "Hg A.		11.0	11.0	11.0	11.0	11.0	14.5				30.0
Flowrate, Suit Ventilation cfm		12	12	12	12	12	12				0.0
Suit/Cabin ΔP "H_2O		6.0	6.0	6.0	6.0	6.0	5.5				0.0
Tank Altitude ft		34K	34K	34K	34K	34K	34K	18K	6K	3K	SL
Tank Temp °F		79°		79°	79°	79°	81°	84°	86°	88°	89°
Treadmill Start/Stop		-	-	-	#	STOP					
O_2 Consumption (L/min)											
CO_2 Production (L/min)											
Pulse Rate											
Blood Pressure											
Respiration Rate											
Body Temperature											
Comfort Level											
Remarks:											
Heat Ex. H_2O Out cc		60cc		100cc	50cc	60cc					90cc
100% O_2 Inlet Gas											

	Wt. Before Test	Wt. after Test	Time On Bottle
O_2 Bottle #1			
O_2 Bottle #2			
O_2 Bottle #3			

Garment Weight, gm
Before Test 394
After Test 395

ALTITUDE EQUIPMENT DIVISION
CALCULATED
RECORDED
DRAWN
CHECKED
APPROVED

PRESSURE SUIT VENTILATION TEST

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

Experiment No. 39
Test Subject André Kas
Altitude 34K ft
Treadmill Speed 2 mph

Suit Ventilation Rate 12 cfm (40%)
Dew Point Temperature 50°F
Suit Inlet Temperature 50°D

DATE June 15, 1962
BAR 29.82

Time	Strip Chart #	1:33	1:35	1:40	1:45	1:50	1:55	2:00	2:05	2:10	2:15	2:20	2:25	2:30	2:35	2:40
Water Tank (Chiller) °F	1	42	43	44	43	43	43	45	43	43	45	44	43	44	43	44
Saturation Tank °F	2	90	90	90	91	93	96	97	97	97	97	98	98	100	100	100
Heat Exchanger In °F	3	85	85	85	86	87	90	91	87	85	85	85	85	85	87	88
Heat Exchanger Out °F	4	54	52	51	53	52	51	52	55	53	55	55	54	55	54	52
Flow Rater In °F	5	89	89	89	90	92	94	98	97	97	97	97	97	97	99	99
Suit In °F	6	52	52	51	50	50	52	50	52	50	54	53	53	54	51	54
Dew Point, Suit In °F		-	-	48	48	48	49	-	48.5	48.5	48.5	49.0	49.0	49.5	50.5	50.5
Suit Out °F	7	81	80	81	81	81	80	81	81	81	83	83	83	84	85	85
Dew Point, Suit Out °F		-	-	55	55	55	55.5	-	54.0	52	53	53	57.0	55	56.0	56.0
Saturation Tank Pressure "Hg A.		24.2	24.2	24.2	25.8	24.2	24.0	19.2	13.8	13.8	12.0	12.0	12.0	12.0	13.8	11.0
Flowrate, Suit Ventilation cfm		12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
Suit/Cabin ΔP "H_2O		6.2	6.2	6.8	6.2	6.0	5.8	6.5	8.0	7.5	8.0	8.0	7.8	7.5	7.5	6.0
Tank Altitude ft		5K	10K	10K	10K	10K	10K	18K	34K	34K	34K	34K	34K	34K	34K	34K
Tank Temp °F		79°	73°				78°	71°	73°		77°		78°	78°		79°
Treadmill Start/Stop															START	-
O_2 Consumption (L/min)																
CO_2 Production (L/min)																
Pulse Rate																
Blood Pressure																
Respiration Rate																
Body Temperature																
Comfort Level																
Remarks:																
Heat Ex. H_2O Out cc		175cc					155cc				200 cc		80cc	45cc		85 cc
100% O_2 Inlet Gas																

	Wt. Before Test	Wt. after Test	Time On Bottle
O_2 Bottle #1			
O_2 Bottle #2			
O_2 Bottle #3			

Garment Weight
Before Test 394
After Test 395

ALTITUDE EQUIPMENT DIVISION
CALCULATED
RECORDED
DRAWN
CHECKED
APPROVED

PRESSURE SUIT VENTILATION

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

Date 6-15-62, 1962

RUN NUMBER 39

TIME	DEW POINT °F IN	DEW POINT °F OUT	PRESS. ABS. in. Hg	SUIT TEMP °F IN No. 6	SUIT TEMP °F OUT No. 7
1:40	48.0	55.0	20.8	52	81
1:45	48.0	55.0	20.9	50	81
1:50	48.0	55.0	20.8	51	81
1:55	49.0	55.5	20.8	52	80
2:05	48.5	54.0	7.4	51	81
2:10	48.5	52.0	7.4	52	81
2:15	48.5	53.0	7.3	52	82
2:20	49.0	53.0	7.3	53	83
2:25	49.0	57.0	7.3	53	84
2:30	49.5	55.0	7.3	53	84
2:35	50.5	56.0	7.2	52	84
2:40	50.5	56.0	7.2	51	84
2:45	49.5	56.0	7.3	53	85
2:50	49.0	55.5	7.2	53	86
2:55	49.0	58.0	7.2	53	86
3:00	49.5	58.0	7.2	53	86
3:05	49.0	61.0	7.2	54	86
3:08	49.0	60.0	7.1	52	88
3:17	49.5	60.0	S.L.	52	86

Experiment No. 40
Test Subject Tom Dunne
Altitude 19,000 ft
Treadmill Speed 2 mph

Suit Ventilation Rate 12 cfm (46%)
Dew Point Temperature 50°F
Suit Inlet Temperature 50°F

DAT June 18, 1962
BAR 29.84 in. Hg

Time	Strip Chart #	10:50	11:06
Water Tank (Chiller) °F	1	46	
Saturation Tank °F	2	106	
Heat Exchanger In °F	3	94	
Heat Exchanger Out °F	4	55	
Flow Meter In °F	5	103	
Suit In °F	6	55	
Dew Point, Suit In °F		43.5	
Suit Out °F	7	83	
Dew Point, Suit Out °F		61.5	
Saturation Tank Pressure "Hg A.		23.8	
Flowrate, Suit Ventilation cfm		12.0	
Suit/Cabin ΔP "H_2O		7.0	
Tank Altitude ft		10K	
Tank Temp °F		82	83
Treadmill Start/Stop			
O_2 Consumption (L/min)			
CO_2 Production (L/min)			
Pulse Rate			
Blood Pressure			
Respiration Rate			
Body Temperature			
Comfort Level			
Remarks: Heat Exchanger H_2O Out cc		200	70
50% N_2, 50% O_2			
Inlet Gas			

	Wt. Before Test	Wt. after Test	Time On Bottle
O_2 Bottle #1			
O_2 Bottle #2			
O_2 Bottle #3			

Garment Weight, gm
Before Test 394
After Test 392

ALTITUDE EQUIPMENT DIVISION
CALCULATED
RECORDED
DRAWN
CHECKED
APPROVED

PRESSURE SUIT VENTILATION TEST

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

Experiment No. 40
Test Subject T1 Tom Dunne
Altitude 19,000 ft
Treadmill Speed 2 mph

Suit Ventilation Rate 12 cfm (46%)
Dew Point Temperature 50°F
Suit Inlet Temperature 50°F

DATE June 18, 1962
BAR 29.84 in. Hg

Time	Strip Chart #	9:35	9:40	9:45	9:50	9:55	10:00	10:05	10:10	10:15	10:20	10:25	10:30	10:35	10:40	10:45
Water Tank (Chiller) °F	1	39	39	39	39	39	39	40	40	39	39	39	38	38	38	38
Saturation Tank °F	2	105	105	105	102	98	98	99	99	100	98	100	102	105	108	110
Heat Exchanger In °F	3	92	91	90	90	88	88	87	88	88	88	88	90	92	93	94
Heat Exchanger Out °F	4	55	55	54	54	53	53	54	55	55	54	55	55	56	56	56
Flow Rater In	5	102	101	100	100	98	98	96	97	99	99	99	100	100	102	105
Suit In	6	54	54	54	54	54	54	54	56	56	55	55	55	56	56	56
Dew Point, Suit In				42.0	42.0	42	42	43	44.5	44.0	43.5	43.5	44.0	44.0	44.0	
Suit Out	7	82	80	80	82	82	83	82	83	84	84	84	84	86	86	86
Dew Point, Suit Out				53.0	52.0	47	50	52	53	57.0	56.0	58.5	59.5	62.5	62.0	
Saturation Tank Pressure "Hg A		34.5	21.0	20.0	20.0	20.5	20.5	20.4	20.0	20.5	20.5	19.0	19.0	19.0	20.6	20.6
Flowrate, Suit Ventilation cfm		12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
Suit/Cabin ΔP "H_2O		5.5	15	8.0	7.8	8.0	8.0	8.0	7.0	7.0	7.0	7.5	7.0	8.0	7.8	7.5
Tank Altitude		SL	19K	19K	19K	19K	19K	19K	19K	19K	19K	19K	19K	19K	19K	19K
Cabin Air Temp °F		77				76				76		77		78		
Treadmill Start/Stop										START					STOP	
O_2 Consumption (L/min)																
CO_2 Production (L/min)																
Pulse Rate																
Blood Pressure																
Respiration Rate																
Body Temperature																
Comfort Level																
Remarks:																
Heat Exchanger H_2O Out		90 cc				200				190		125		115		
50% N_2 50% O_2 Inlet Gas																

	Wt. Before Test	Wt. after Test	Time On Bottle,
O_2 Bottle #1			
O_2 Bottle #2			
O_2 Bottle #3			

Garment Weight, gm
Before Test 194
After Test 192

ALTITUDE EQUIPMENT DIVISION
CALCULATED
RECORDED
DRAWN
CHECKED
APPROVED

PRESSURE SUIT VENTILATION TEST

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

Date 6-18, 1962

RUN NUMBER 40

TIME	DEW POINT °F IN	DEW POINT °F OUT	PRESS. ABS. in. Hg	SUIT TEMP °F IN	SUIT TEMP °F OUT
9:45	42.0	53.0	14.5	56	82
9:50	42.0	52.5	14.5	56	82
9:55	42.0	47.0	14.5	56	82
10:00	42.0	50.0	14.5	55	82
10:05	43.0	52.0	14.5	55	82
10:10	44.5	53.0	14.5	57	83
10:15	44.0	57.0	14.5	56	83
10:20	43.5	56.0	14.5	56	84
10:26	43.5	58.5	14.5	56	84
10:30	44.0	59.5	14.5	56	86
10:35	44.0	62.5	14.5	57	86
10:40	44.0	62.0	14.5	58	86
10:44	44.5	59.5	14.4	56	84
11:05	43.5	61.5	29.8	56	83

Experiment No. 41
Test Subject André Kaz
Altitude 19000 ft
Treadmill Speed 2 mph

Suit Ventilation Rate 12 scfm (46%)
Dew Point Temperature 50°F
Suit Inlet Temperature 50°F

DATE June 18, 1962
BAR 29.84 in. Hg

Time	Strip Chart #	1:40	1:45	1:50	1:55	2:000	2:05	2:10	2:15	2:20	2:25	2:30	2:35	2:40	2:45	2:50
Water Tank (Chiller) °F	1	35	35	35	35	35	38	38	40	42	42	42	41	42	43	42
Saturation Tank °F	2	110	108	102	100	100	100	100	100	100	100	100	100	101	105	105
Heat Exchanger In °F	3	100	100	98	93	92	92	92	92	94	94	93	95	95	95	96
Heat Exchanger Out °F	4	52	51	48	48	50	52	50	51	51	52	53	52	52	52	53
Flow Rater In °F	5	106	106	104	102	98	98	98	98	100	100	100	100	100	100	100
Suit In °F	6	52	51	48	50	48	50	50	51	51	52	51	52	51	53	53
Dew Point, Suit In °F			37	37	37	37	38	40	40	40	40	43	43	43	43	
Suit Out °F	7	82	82	80	80	82	82	83	85	85	86	86	86	87	88	85
Dew Point, Suit Out °F			44.5	46.5	46.5	47	48	51.5	55	55	54	54	54	626	60	
Saturation Tank Pressure "Hg A.		33	25	17.2	17.2	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0
Flowrate, Suit Ventilation cfm		12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
Suit/Cabin ΔP "H_2O		0	6	5.5	5.8	6.0	6.0	6.2	7.0	5.8	5.8	5.8	6.6	6.6	6.8	4.5
Tank Altitude ft		SL	10K	19K	19K	19K	19K	19K	19K	19K	19K	19K	19K	19K	19K	18K
Tank Temp °F		80		74						79					80	
Treadmill Start/Stop								START							STOP	
O_2 Consumption (L/min)																
CO_2 Production (L/min)																
Pulse Rate																
Blood Pressure																
Respiration Rate																
Body Temperature																
Comfort Level																
Remarks:																
Heat Ex. H_2O Out				380		205				180					205	
50% N_2 50% O_2 Inlet Gas																

	Wt. Before Test	Wt. after Test	Time On Bottle
O_2 Bottle #1			
O_2 Bottle #2			
O_2 Bottle #3			

Garment Weight, gm
Before Test 192
After Test 194

ALTITUDE EQUIPMENT DIVISION
CALCULATED
RECORDED
DRAWN
CHECKED
APPROVED

PRESSURE SUIT VENTILATION TEST

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

Experiment No. 41
Test Subject André Kas
Altitude 1900 ft
Treadmill Speed 2 mph

Suit Ventilation Rate 12 cfm (46%)
Dew Point Temperature 50°F
Suit Inlet Temperature 50°F

DATE June 18, 1962
BAR 29.84 in.

Time	Strip Chart #	2:55	3:00		
Water Tank (Chiller) °F	1	42	42		
Saturation Tank °F	2	98	92		
Heat Exchanger In °F	3	92	88		
Heat Exchanger Out °F	4	52	52		
Flow Rater In °F	5	98	95		
Suit In °F	6	52	52		
Dew Point, Suit In °F			42		
Suit Out °F	7	86	85		
Dew Point, Suit Out °F			58		
Saturation Tank Pressure "Hg A		25.5	30.5		
Flowrate, Suit Ventilation cfm		12	12		
Suit/Cabin ΔP "H_2O		4.5	4.2		
Tank Altitude ft		8K	2K		
Tank Temp °F		84	86	88	
Treadmill Start/Stop					
O_2 Consumption (L/min)					
CO_2 Production (L/min)					
Pulse Rate					
Blood Pressure					
Respiration Rate					
Body Temperature					
Comfort Level					

Remarks:
Heat Ex. H_2O Out 100 cc 45cc
50% N_2 50% O_2 Inlet Gas

	Wt. Before Test	Wt. after Test	Time On Bottle
O_2 Bottle #1			
O_2 Bottle #2			
O_2 Bottle #3			

Garment [illegible] gm
Before Test [illegible]
After Test 794

ALTITUDE EQUIPMENT DIVISION
CALCULATED
RECORDED
DRAWN
CHECKED
APPROVED

PRESSURE SUIT VENTILATION TEST

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

Date 6-18-62, 1962

RUN NUMBER 41

TIME	DEW POINT °F IN	DEW POINT °F OUT	PRESS. ABS. in. Hg	SUIT TEMP °F IN No. 6	SUIT TEMP °F OUT No. 7
1:45	37	44.5	14.4	46	82
1:50	37	46.5	14.5	49	82
1:55	37	46.5	14.5	47	83
2:00	37	47.0	14.5	48	83
2:05	38	48.0	14.5	49	83
2:10	40	51.5	14.45	51	84
2:15	40	55	14.5	54	86
2:20	40	55	14.5	52	85
2:25	40	54	14.5	52	86
2:30	43	54	14.5	52	86
2:35	43	54	14.5	52	86
2:40	43	62	14.5	52	88
2:44	43	60	14.4	53	88
3:03	42	58	29.4	52	86

Experiment No. 42
Test Subject Tom Dunne
Altitude 34 K
Treadmill Speed 2 mph

Suit Ventilation Rate 14 cfm (45.5%)
Dew Point Temperature 50°F
Suit Inlet Temperature 50°F
Down for communication Up at 2:27 pm

DATE June 25, 1962
BAR 29.74

Time	Strip Chart #	1:55	2:28	2:35	2:40	2:45	2:50	2:55	3:00	3:05	3:10	3:15	3:20	3:35	3:40	3:45
											45	44	44	44	43	43
Water Tank (Chiller) °F	1	42	39	39	46	46	45	45	45	45	82	82	82	84	85	85
Saturation Tank °F	2	10:	89	85.5	78	77	82	82	82	81	71	71	71	72	72	73
Heat Exchanger In °F	3	9:	82	74	73	73	70	71	71	71	47	49	48	47	47	47
Heat Exchanger Out °F	4	43	47	48	47	47	47	48	49	48	81	81	81	83	83	80
Flow Rator In °F	5	105	88	85	78	82	82	81.5	81	81	48	49	48	48	50	47
Suit In °F	6	46	46	46	46	47	46	48	48.5	48						
Dew Point, Suit In °F											88	84	85	86	86	85
Suit Out °F	7	76	76	78	80	80.5	82	82	82	84						
Dew Point, Suit Out °F											14.5	14.6	14.3	14.3	14.3	15.5
Saturation Tank Pressure "Hg A		35	29.5	15	15.5	15.3	14.6	14.5	14.8	14.	14	14	14	14	14	14
Flowrate, Suit Ventilation cfm		4	8	14	14	14	14	14.	14	14	18.5	19	18.5	18.5	18.5	18.5
Suit/Cabin ΔP "H_2O		4	16.5	29	19	19	20.5	18.8	18.3	19.	34000	34,000	34K'	34K'	34K'	34K'
Tank Altitude ft		SL	3500	34,000	34,000	34,000	34,000	34,000	34,000	34,00		79	79			
Cabin Temp °F			76	75			79		78		100			655 Total		
Treadmill Start/Stop																
H_2O from Heat Exchanger °F			210			195		65								
O_2 Consumption (L/min)																
CO_2 Production (L/min)																
Pulse Rate																
Blood Pressure																
Respiration Rate																
Body Temperature																
Comfort Level																

Remarks:

Down at 1:55 for repair of communications in helmet.
Up again at 2:27
On O_2 at 1:43 pm
Pressure point in chest of suit was relieved when the lacing in the back was pulled down.

	Wt. Before Test	Wt. after Test	Time On Bottle
O_2 Bottle #1			
O_2 Bottle #2			
O_2 Bottle #3			

Garment Weight, gm
Before Test 352
After Test 357

ALTITUDE EQUIPMENT DIVISION
CALCULATED
RECORDED
DRAWN
CHECKED
APPROVED

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

Experiment No. 42
Test Subject Tom Dunne
Altitude 34 K
Treadmill Speed 2 mph

Suit Ventilation Rate 14 cfm (45.5%)
Dew Point Temperature 50°F
Suit Inlet Temperature 50°F

DATE June 25, 1962
BAR 29.74

Time	Strip Chart #	3:50	3:55	4:00	4:05	4:10	4:15
Water Tank (Chiller) °F	1	43	43	44			
Saturation Tank °F	2	87	87	87			
Heat Exchanger In °F	3	73	73	75			
Heat Exchanger Out °F	4	46	47	48			
Flow Rator In °F	5	86	86	87			
Suit In °F	6	47	47	48			
Dew Point, Suit In °F							
Suit Out °F	7	86	86	84			
Dew Point, Suit Out °F							
Saturation Tank Pressure "Hg A		14	14	14			
Flowrate, Suit Ventilation cfm		14	14	14			
Suit/Cabin ΔP "H_2O		19	18.5	19.0			
Tank Altitude ft		34K	34K	34K			SL
Tank Temp °F			80				88
Treadmill Start/Stop			OFF (3:56)				
O_2 Consumption (L/min)							
CO_2 Production (L/min)							
Pulse Rate							
Blood Pressure							
Respiration Rate							
Body Temperature							
Comfort Level							
Remarks:							
Heat Exchanger H_2O Out cc			815 TOTAL				95

	Wt. Before Test	Wt. after Test	Time On Bottle
O_2 Bottle #1			
O_2 Bottle #2			
O_2 Bottle #3			

Garment Weight, gm
Before Test 382
After Test 375

ALTITUDE EQUIPMENT DIVISION
CALCULATED
RECORDED
DRAWN
CHECKED
APPROVED

PRESSURE SUIT VENTILATION

AIRESEARCH MANUFACTURING CO
LOS ANGELES CALIFORNIA

Date June 25, 1962

RUN NUMBER 42

TIME	DEW POINT °F IN	DEW POINT °F OUT	PRESS. ABS. in. Hg	SUIT TEMP °F IN	SUIT TEMP °F OUT
2:45	38	48	7.25 "Hg A	46	80
2:50	38	48.5	7.25 "Hg A	46.5	81
2:56	←		RECORDER TROUBLE		→
3:12	40	53	7.20 "Hg A	47	84
3:15	40	52	7.20 "Hg A	47	84
3:20	40	52.5	7.20 "Hg A	48	85
3:25	40	57.5	7.20 "Hg A	48	85
3:30	40	58.5	7.20 "Hg A	50	96
3:35	38	62	7.20 "Hg A	48	86
3:40	38	63	7.20 "Hg A	49	86
3:45	37	62	7.20 "Hg A	46	86
3:50			CHANGED PAPER	47	86
3:55	37	62	7.20 "Hg A	47	86
4:02	37	52	7.20 "Hg A	49	84

Experiment No. 43
Test Subject David Voel
Altitude 34K
Treadmill Speed 2 mph (45 min)

Suit Ventilation Rate 14 cfm (45.5%)
Dew Point Temperature 50°F
Suit Inlet Temperature 50°F

DATE June 25, 1962
BAR 29.64

Time	Strip Chart #	6:05	6:10	6:15	6:20	6:25	6:30	6:35	6:40	6:45	6:50	6:55	7:00	7:05	7:10	7:15
Water Tank (Chiller) °F	1	46	47	45	44	45	45	45	47			47	50	49	48	49
Saturation Tank °F	2	87	82	96	90	90	88	96	94			92	90	90	90	90
Heat Exchanger In °F	3	82	82	82	83	83	83	78	79			77	80	81	80	81
Heat Exchanger Out °F	4	50	50	49	49	48	48	50	52			59	53	50	52	53
Flow Rator In °F	5	86	90	90	89	89	90	94	93			90	90	90	90	89
Suit In °F	6	51	51	49	50	50	50	50	50			53	52	52	51	53
Dew Point, Suit In °F							38.5									
Suit Out °F	7	83	84	83	82	82	83	83	84			83	85	85	85	86
Dew Point, Suit Out °F							56									
Saturation Tank Pressure "Hg A		34.5	28.0	99.5	29.0	23.0	18.0	14.6	12.1			12.2	12.2	12.3	12.3	12.3
Flowrate, Suit Ventilation cfm		14	14	14	14	4	4	14	14			14	14	14	14	14
Suit/Cabin ΔP "H_2O		1.0	9.0	9.2	9.2	5.0	8.5	16.0	19.7			19	19.5	20.0	19.0	20.0
Tank Altitude ft		SL	10K	10K	10K	10K	20K									
Tank Temp °F		81			80			74			79	80		7:04 ON		20
Treadmill Start/Stop																
O_2 Consumption (L/min)																
CO_2 Production (L/min)																
Pulse Rate																
Blood Pressure																
Respiration Rate																
Body Temperature																
Comfort Level																
Remarks:																
H_2O From Heat Exchanger		155			45 cc			80cc			TOTAL 485				TOTAL 695	

	Wt. Before Test	Wt. after Test	Time On Bottle
O_2 Bottle #1			
O_2 Bottle #2			
O_2 Bottle #3			

Garment Weight, gm
Before Test 353
After Test 403

ALTITUDE EQUIPMENT DIVISION
CALCULATED
RECORDED
DRAWN
CHECKED
APPROVED

PRESSURE SUIT VENTILATION TEST

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

Experiment No. 43
Test Subject Dave Vogel
Altitude 34,000 Ft
Treadmill Speed 2 mph

Suit Ventilation Rate 14 cfm (45.5%)
Dew Point Temperature 50°F
Suit Inlet Temperature 50°F

DATE June 25, 1962
BAR 29.64

Time	Strip Chart #	7:20	7:25	7:30	7:35	7:40	7:45	7:50	7:55	8:00		
Water Tank (Chiller) °F	1		50	50	50	49	50	50	49			
Saturation Tank °F	2		90		90	90	90	90	90			
Heat Exchanger In °F	3		80		81	81	81	80	81			
Heat Exchanger Out °F	4		53		53	53	53	53	53			
Flow Rator In °F	5		89		90	89	88	90	89			
Suit In °F	6		52		53	53	51	52	52			
Dew Point, Suit In °F												
Suit Out °F	7		86		87	86	86	86	86			
Dew Point, Suit Out °F												
Saturation Tank Pressure "Hg A.			12.3		12.3	12.3	12.3	12.3	12.3			
Flowrate, Suit Ventilation cfm			14		14	14	14	14	14	6		
Suit/Cabin ΔP "H_2O			19.8		20.0	20.0	20.0	20.0	20.0	6.8		
Tank Altitude ft.			34K'		34K'	34K'	34K'	34K'	34K'	10K'	SL	
Tank Temp °F								STOP		86		
Treadmill Start/Stop											88	
O_2 Consumption (L/min)												
CO_2 Production (L/min)												
Pulse Rate												
Blood Pressure												
Respiration Rate												
Body Temperature												
Comfort Level												

Remarks: 995 cc ← TOTAL → 1020 cc 1150 TOTAL

	Wt. Before Test	Wt. after Test	Time On Bottle
O_2 Bottle #1			
O_2 Bottle #2			
O_2 Bottle #3			

Garment Weight, gm
Before Test 353
After Test 403

ALTITUDE EQUIPMENT DIVISION		
CALCULATED		
RECORDED		
DRAWN		
CHECKED		
APPROVED		

PRESSURE SUIT VENTILATION TEST

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

NO. 1

Date _____, 1962

RUN NUMBER 43

TIME	DEW POINT °F IN	DEW POINT °F OUT	PRESS. ABS. in. Hg	SUIT TEMP °F IN 6	SUIT TEMP °F OUT 7
1800	41.5	62.5	30"	55	85
1809	39.5	59	20.5	50	83
1812	40	58	20.5	49	83
1815	39	56	20.5	50	83
1818	39.5	55	20.5	50	82
1821	39.5	54.5	20.5	49	82
1824	39.5	54	20.5	50	82
1827	38.5	56	20.5	50	83
1835	37.5	50.5	7"	51	82
1840	37.5	53.5	7"	50	82
1845	39.5	50.5	7.3	51	83
1850	40	50.5	7.3	53	84
1855	40.5	50.5	7.3	50	83
1900	40.5	50.5	7.3	53	84
1905	40.5	52.5	7.3	51	84
1905			TREADMILL		

NO. 2

Date 6-25-62, 1962

RUN NUMBER 43

TIME	DEW POINT °F IN	DEW POINT °F OUT	PRESS. ABS. in. Hg	SUIT TEMP °F IN	SUIT TEMP °F OUT
1910	41	53	7.3	52	85
1915	43	61	7.3	52	85
1920	43	63	7.3	50	86
1925	43.5	65	7.3	52	87
1930	43.5	66	7.3	52	86
1935	43.5	69	7.3	52	85
1940	42	71.5	7.3	52	86
1945	42	71.5	7.3	52	86
1949	42.5	69	7.3	52	86
1950			TREADMILL OFF		
1953	42	66		53	85
2003	44.5	66	29.9	55	87

Experiment No. 44
Test Subject Dick Betts
Altitude 19,000 Ft
Treadmill Speed 2 mph

Suit Ventilation Rate 14 cfm
Dew Point Temperature 50°F
Suit Inlet Temperature 50°F

DATE June 25, 1962
BAR 29.63 in. Hg

Time	Strip Chart #	9:30	9:40	9:45	9:50	9:55	10:00	10:05	10:10	10:15	10:20	10:25	10:30	10:35	10:40	10:45
											45	46	46	46	47	47
Water Tank (Chiller) °F	1	43	44	44	45	47	46	47	45	45	88	88	89	90	90	91
Saturation Tank °F	2	95	88	86	84	84	84	85	86	86	77	78	78	79	79	80
Heat Exchanger In °F	3	82	84	80	78	76	75	75	75	76	50	49	50	50	50	50
Heat Exchanger Out °F	4	47	47	47	47	50	50	50	47	49	87	87	88	83	89	89
Flow Rotor In °F	5	95	91	87	85	84	84	84	85	85	48	48	49	49	49	51
Suit In °F	6	50	48	51	49	50	50	50	50	49	36	37	36.5	37	37	37.5
Dew Point, Suit In °F		40	36	45	36	35	36.5	37	37	37	83	83	84	85	85	85
Suit Out °F	7	79	82	81	82	82	82	84	83	83	53.5	59	64	68.5	69	69
Dew Point, Suit Out °F		72	61	53.5	52.5	52.5	52	55	53	50	23.1	23.1	23.1	23.0	23.0	23.1
Saturation Tank Pressure "Hg A.			22.5	22.5	22.5	23.0	23.0	23.0	23.0	23.1	14	14	14	14	14	14
Flowrate, Suit Ventilation cfm		14	14	14	14	14	14	14	14	14	15.7	15.0	15.0	14.2	14.5	14.7
Suit/Cabin ΔP "H_2O		1.0	14.2	13.7	13.9	15.3	15.7	15.5	16.0	16.1	19K	19K	19K	19K	19K	19K
Tank Altitude ft		SL	19K	19K	19K	19K	19K	19K	19K	19K	79°F			80°F		
Tank Temp °F		80°	77°			79°										
Treadmill Start/Stop																
O_2 Consumption (L/min)																
CO_2 Production (L/min)																
Pulse Rate																
Blood Pressure																
Respiration Rate																
Body Temperature																
Comfort Level																
Remarks:																
Heat Ex. H_2O Drain Out			125cc			155										
											295			120		

	Wt. Before Test	Wt. after Test	Time On Bottle
O_2 Bottle #1			
O_2 Bottle #2			
O_2 Bottle #3			

Garment Weight, gm
Before Test 734
After Test 963

ALTITUDE EQUIPMENT DIVISION		
CALCULATED		
RECORDED		
DRAWN		
CHECKED		
APPROVED		

PRESSURE SUIT VENTILATION TEST

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

Experiment No. 44

Test Subject: Dick Betts

Altitude: 19K ft

Treadmill Speed: 2 mph (45 min)

Suit Ventilation Rate: 14 cfm (53%)

Dew Point Temperature: 50°

Suit Inlet Temperature: 50°

DATE: June 25, 1962

BAR

Time	Strip Chart #	10:50	10:55	11:00	11:05	11:10	11:15
Water Tank (Chiller) °F	1	48	48	48	48	51	50
Saturation Tank °F	2	91	92	92	91	92	92
Heat Exchanger In °F	3	80	80	80	80	79	83
Heat Exchanger Out °F	4	50	53	52	53	53	50
Flow Rator In °F	5	89	90	90	91	90	91
Suit In °F	6	52	53	52	53	53	54
Dew Point, Suit In °F		38	38.5	39.5	41	41.5	
Suit Out °F	7	84	84	84	84	84	84
Dew Point, Suit Out °F		70	72	71	73	69.5	
Saturation Tank Pressure "Hg A		23.1	23.1	23.0	23.0	23.0	
Flowrate, Suit Ventilation cfm	14	14	14	14	14	14	14
Suit/Cabin Δ "Hg		15.0	14.0	14.5	14.0	14.0	
Duct Altitude ft		19K	19K	19K	19K	19K	8L
Tank Temp °F			81°			81°	85°
Treadmill Start/Stop							
O_2 Consumption (L/min)							
CO_2 Production (L/min)							
Pulse Rate							
Blood Pressure							
Respiration Rate							
Body Temperature							
Comfort Level							
Remarks:							
Heat Ex. H_2O Drain Out			190 760				170

	Wt. Before Test	Wt. After Test	Time On Bottle
O_2 Bottle #1			
Bottle #2			
Bottle #3			

Garment Weight, gm
Before Test 734
After Test 763

ALTITUDE EQUIPMENT DIVISION
CALCULATED
RECORDED
DRAWN
CHECKED
APPROVED

PRESSURE SUIT VENTILATION TEST

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

Date 6-25-62, 1962

RUN NUMBER 44

TIME	DEW POINT °F IN	DEW POINT °F OUT	PRESS. ABS. in. Hg	SUIT TEMP °F IN No. 6	SUIT TEMP °F OUT No. 7
2130	40	72	29.9	50	85
2140	36	61	14.4	47	82
2145	36	53.5	14.5	49	82
2150	36	52.5	14.4	50	82
2155	35	52.5	14.5	48	82
2200	36.5	52	14.5	48	82
2205	37	5.5	14.5	49	83
2210	37	53	14.5	48	83
2215	37	50	14.5	48	82
2220	36	53.5	14.5	48	84
2222			TREADMILL ON		
2225	37	59	14.5	50	84
2230	36.5	64	14.5	50	84
2235	37	68.5	14.5	50	84
2240	37	69	14.5	50	85
2245	37.5	69	14.5	51	84

Date 6-25-62, 1962

RUN NUMBER 44

TIME	DEW POINT °F IN	DEW POINT °F OUT	PRESS. ABS. in. Hg	SUIT TEMP °F IN	SUIT TEMP °F OUT
2250	38	70	14.5	51	84
2255	38.5	72	14.5	53	84
2300	39.5	71	14.5	51	84
2305	41	73	14.5	53	84
2307			TREADMILL OFF	53	84
2309	41.5	69.5	14.5		

Experiment No. 45
Test Subject Thomas Dunne
Altitude 19,000 ft
Treadmill Speed 2 mph

Suit Ventilation Rate 14 cfm (55%)
Dew Point Temperature 50°F
Suit Inlet Temperature 50°F

DATE June 26, 1962
BAR 29.60 in. Hg

Time	Strip Chart #	9:45	9:50	9:55	10:00	10:05	10:10	10:15	10:20	10:25	10:30	10:35	10:40	10:45	10:50	10:55
											47	47	47	47	48	48
Water Tank (Chiller) °F	1	41	42	43	43	44	44	45	45	45	93	92	93	91	93	93
Saturation Tank °F	2	93	93	91	91	91	91	91	92	93	81	82	81	82	82	82
Heat Exchanger In °F	3	81	80	80	79	81	80	81	80	81	50	53	52	53	52	53
Heat Exchanger Out °F	4	44	46	47	47	47	47	49	50	50	92	92	92	92	92	92
Flowrator In °F	5	91	92	91	91	91	91	91	91	91	52	53	51	52	52	50
Suit In °F	6	45	46	46	46	46	47	48	47	51						
Dew Point, Suit In °F											84	84	85	85	85	85
Suit Out °F	7	81	81	81	81	81	81	82	83	83						
Dew Point, Suit Out °F											23.3	23.4	23.2	23.4	23.5	23.8
Saturation Tank Pressure "Hg A.		23.0	23.1	23.2	23.2	23.4	23.3	23.3	23.3	23.1	14	14	14	14	14	14
Flowrate, Suit Ventilation cfm		14	14	14	14	14	14	14	14	14	7.0	7.5	7.0	7.5	7.5	7.5
Suit/Cabin ΔP "H_2O		3.7	5.8	7.2	8.6	7.2	8.0	7.0	6.7	7.0	19K	19K	19K	19K	19K	19K
Tank Altitude ft		19	19	19	19	19	19	19	19	19				79°F		
Suit In/Out ΔP					3.9	5.0	5.5	5.3	5.7	5.7	6.5	5.6	6.0	5.5	5.5	6.5
Treadmill Start/Stop								1016:15								
O_2 Consumption (L/min)																
CO_2 Production (L/min)																
Pulse Rate																
Blood Pressure																
Respiration Rate																
Body Temperature																
Comfort Level																
H_2O From Heat Exchanger						230				185						
Remarks:														190		

	Wt. Before Test	Wt. after Test	Time On Bottle
O_2 Bottle #1			
O_2 Bottle #2			
O_2 Bottle #3			

Garment Weight, gm
Before Test 363
After Test 373

ALTITUDE EQUIPMENT DIVISION
CALCULATED
RECORDED
DRAWN
CHECKED
APPROVED

PRESSURE SUIT VENTILATION

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

Experiment No. 45
Test Subject Tom Dunne
Altitude 19,000 ft
Treadmill Speed 2 mph

Suit Ventilation Rate 14 cfm (53%)
Dew Point Temperature 50°F
Suit Inlet Temperature 50°F

DATE 6-26-62
BAR 29.60 in. Hg

Time	Strip Chart #	11:00	11:04	11:09	11:11
Water Tank (Chiller) °F	1	49	50		48
Saturation Tank °F	2	92	93		100
Heat Exchanger In °F	3	81	82		85
Heat Exchanger Out °F	4	53	53		52
Flowrator In °F	5	92	92		94
Suit In °F	6	53	53		54
Dew Point, Suit In °F					
Suit Out °F	7	85.5	84		85
Dew Point, Suit Out °F					
Saturation Tank Pressure "Hg A.		23.2	23.3		
Flowrate, Suit Ventilation cfm		14	14		
Suit/Cabin ΔP "H_2O		7.5	8.8		
Tank Altitude ft		19K	19K	10K	
Temperature °F		80°F		84°F	87°F
Treadmill Start/Stop		OFF	11:01:15		
Suit In/Out ΔP		6.5	3.7		
O_2 Consumption (L/min)					
CO_2 Production (L/min)					
Pulse Rate					
Blood Pressure					
Respiration Rate					
Body Temperature					
Comfort Level					
H_2O From Heat Exchanger		165			60

Remarks:

	Wt. Before Test	Wt. after Test	Time On Bottle
O_2 Bottle #1			
O_2 Bottle #2			
O_2 Bottle #3			

Garment Weight, lbs
Before Test 363
After Test 373

ALTITUDE EQUIPMENT DIVISION
CALCULATED
RECORDED
DRAWN
CHECKED
APPROVED

PRESSURE SUIT VENTILATION TEST

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

Date 6-26-62, 196

BAR 29.60

RUN NUMBER 45

TIME	DEW POINT °F IN	DEW POINT °F OUT	PRESS. ABS. in. Hg	SUIT TEMP °F IN	SUIT TEMP °F OUT
9:50	38	48	14.4" Hg A	45	81
9:55	37	56	14.4" Hg A	47	81
10:00	37	56	14.4" Hg A	47	81
10:05	40	48	14.5" Hg A	47	81
10:10	43	47	14.5" Hg A	47	81
10:16		TREADMILL ON			
10:20	42	52.5	14.4" Hg A	47	83
10:25	46	54	14.4" Hg A	49	83
10:30	44	63	14.4" Hg A	52	84
10:35	43	65	14.4" Hg A	53	85
10:40	42	66	14.5" Hg A	52	85
10:45	42	67	14.5" Hg A	52	86
10:50	46	69	14.5" Hg A	52	85
10:55	46	69	14.5" Hg A	50	84
10:59	46	70	14.5" Hg A	53	85
11:02	46	68	14.4" Hg A	52	85
11:12	SEA LEVEL 48.5	58	SEA LEVEL	53	85

Experiment No. 46
Test Subject André Kaz
Altitude 19,000 ft
Treadmill Speed 2 mph

Suit Ventilation Rate 12 cfm (46%)
Dew Point Temperature 50°F
Suit Inlet Temperature 50°F

DATE June 26, 1962
BAR 29.58 in. Hg

Time	Strip Chart #	1:35	1:40	1:45	1:50	1:55	2:00	2:05	2:15	2:20	2:30	2:35	2:40	2:45	2:50	2:55
Water Tank (Chiller) °F	1	61	64	63	64	65	42	44	46	43	43	44	45	45	46	46
Saturation Tank °F	2	87	69	64	65	65	66	69	76	80	85	87	88	88	89	89
Heat Exchanger In °F	3	87	70	66	65	65	65	66	70	72	73	81	82	82	83	83
Heat Exchanger Out °F	4	65	71	66	65	65	44	46	45	45	46	47	49	50	50	50
Flowrator In °F	5	83	72	67	65	65	69	69	74		84	86	86	87	88	88
Suit In °F	6	68	71	67	65	65	45	46	45	45.5	47	47	48	49	50	50
Dew Point, Suit In °F																
Suit Out °F	7	70	73	68	68	68	83	83	84	85	85	87	85	85	85	85
Dew Point, Suit Out °F																
Saturation Tank Pressure "Hg A.			17.8	17.8	18.3	18.3	18.3	18.3	17.8	17.8	17.8	17.8	17.8	17.8	17.8	17.8
Flowrate, Suit Ventilation cfm			12	12	12	12	12	12	12	12	12	12	12	12	12	12
Suit/Cabin ΔP "H_2O			4.6	4.5	5.4	7.0	5.6	5.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Tank Altitude ft		8K	19K	19K	19K	19K	19K	19K	19K	19K	19K	19K	19K	19K	19K	19K
Temperature °F		82°F	73°F					80°F	81°F		82				83	
Treadmill Start/Stop									2:11							2:56
Suit In/Out ΔP low H_2O			4.0	3.8	4.8	2.8	4.8	4.8	4.3	4.5	4.5	4.5	4.5	5.0	5.0	5.0
O_2 Consumption (L/min)																
CO_2 Production (L/min)																
Pulse Rate																
Blood Pressure																
Respiration Rate																
Body Temperature																
Comfort Level																
Remarks:																
H_2O From Heat Exchanger	TOTAL		100					265	305			445			605	

	Wt. Before Test	Wt. after Test	Time On Bottle
O_2 Bottle #1			
O_2 Bottle #2			
O_2 Bottle #3			

Garment Weight, gm
Before Test 379
After Test

ALTITUDE EQUIPMENT DIVISION
CALCULATED
RECORDED
DRAWN
CHECKED
APPROVED

PRESSURE SUIT VENTILATION TEST

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

Experiment No. 46
Test Subject André Kaz
Altitude 19,000 Ft
Treadmill Speed 2 mph

Suit Ventilation Rate 12 cfm (46%)
Dew Point Temperature 50°F
Suit Inlet Temperature 50°F

DATE 6-26-62
BAR 29.58

Time	Strip Chart #	3:00	3:05
Water Tank (Chiller)	1		
Saturation Tank	2		
Heat Exchanger In	3		
Heat Exchanger Out	4		
Flowrator In	5		
Suit In	6		
Dew Point, Suit In			
Suit Out	7		
Dew Point, Suit Out			
Saturation Tank Pressure "Hg A.			
Flowrate, Suit Ventilation			
Suit/Cabin ΔP "H_2O			
Tank Altitude			
Tank Temp (°F)			88°F
Treadmill Start/Stop			
Suit In/Out ΔP In. H_2O			
O_2 Consumption (L/min)			
CO_2 Production (L/min)			
Pulse Rate			
Blood Pressure			
Respiration Rate			
Body Temperature			
Comfort Level			
Remarks:			
Heat Exchanger H_2O Drain Out (cm^3)			715

	Wt. Before Test	Wt. after Test	Time On Bottle
O_2 Bottle #1			
O_2 Bottle #2			
O_2 Bottle #3			

Garment Weight
Before Test
After Test

ALTITUDE EQUIPMENT DIVISION
CALCULATED
RECORDED
DRAWN
CHECKED
APPROVED

AIRESEARCH MANUFACTURING CO
LOS ANGELES CALIFORNIA

Date 6-26-62, 1962

29.58

RUN NUMBER 46

TIME	DEW POINT °F IN	DEW POINT °F OUT	PRESS. ABS. in. Hg	SUIT TEMP °F IN	SUIT TEMP °F OUT	
1:41	34	51	14.3" Hg A	70	70	BROWN
1:45	35	50	14.3" Hg A	73	73	BOX
1:50	35	49	14.3" Hg A	65	68	ERRATIC
1:55	35	49	14.3" Hg A	46	84	
2:00	35	47	14.3" Hg A	46	84	
2:05	36.5	46.5	14.3" Hg A	46	84	
2:10	34	51	14.3" Hg A	45	84	
2:11	TREADMILL ON					
2:15	34	51	14.4" Hg A	46	84	
2:20	35	59	14.4" Hg A	45	84	
2:25	36	61.5	14.4" Hg A	46	85	
2:30	37	64	14.4" Hg A	46	85	
2:35	38	66	14.4" Hg A	47	85	
2:40	39	68	14.4" Hg A	49	85	
2:45	39	66	14.4" Hg A	49	85	
2:50	41	68	14.4" Hg A	48	85	
2:55	40.5	69.5	14.4" Hg A	49	85	
3:00	41	69.5	14.4" Hg A	50	84	

NO DEW POINT AT SEA LEVEL DUE TO BROWN RECORDER MALFUNCTION.

Experiment No. 47
Test Subject David Vogl
Altitude 34K ft
Treadmill Speed 2 mph (45 min)

Suit Ventilation Rate 12 cfm
Dew Point Temperature 50°F
Suit Inlet Temperature 50°F

DATE June 28, 1962
BAR 29.57 in. Hg

Time	Strip Chart #	6:00	6:05	6:10	6:15	6:20	6:25	6:37
Water Tank (Chiller) °F	1	48	49	50	50	50	50	
Saturation Tank °F	2	96	97	97	98	98	98	
Heat Exchanger In °F	3	83	84	85	85	85	85	
Heat Exchanger Out °F	4	51	52	55	54	54	55	
Flowrator In °F	5	96	97	97	97	97	97	
Suit In °F	6	51	52	53	55	54	55	
Dew Point, Suit In °F		43.5	43.0	44.0	45.0	45.5	46.5	48.5
Suit Out °F	7	86	87	87	87	87	87	
Dew Point, Suit Out °F		60.0	64.5	68.5	71.5	73.0	74.0	47.5
Saturation Tank Pressure "Hg A		13.5	13.2	13.2	13.0	13.2	13.2	
Flowrate, Suit Ventilation cfm		12	12	12	12	12	12	
Suit/Cabin ΔP "H_2O		4.0	4.2	4.2	4.0	4.2	4.5	
Tank Altitude ft		34K	34K	34K	34K	34K	34K	
Tank Temp °F			82°					
Treadmill Start/Stop		←			MOVING		→	STOP
Suit In/Out ΔP In. H_2O		4.2	5.2	4.2	4.2	4.2	4.0	
O_2 Consumption (L/min)								
CO_2 Production (L/min)								
Pulse Rate								
Blood Pressure								
Respiration Rate								
Body Temperature								
Comfort Level								

Remarks:
H_2O from Heat Exchanger 207 cc

	Wt. before Test	Wt. after Test	Time On Bottle
O_2 Bottle #1			
O_2 Bottle #2			
O_2 Bottle #3			

Garment Weight, gm
Before Test 373
After Test

ALTITUDE EQUIPMENT DIVISION
CALCULATED
RECORDED
DRAWN
CHECKED
APPROVED

PRESSURE SUIT VENTILATION TEST

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

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Experiment No. 47
Test Subject David Vogl
Altitude 34K ft
Treadmill Speed 2 mph (45 min)

Suit Ventilation Rate 12 cfm (39%)
Dew Point Temperature 50°F
Suit Inlet Temperature 50°F

DAT- June 26, 1962
BAR 29.57 in. Hg

Time	Strip Chart #	4:47	4:50	4:55	5:00	5:05	5:10	5:15	5:20	5:25	5:30	5:35	5:40	5:45	5:50	5:55
Water Tank (Chiller) °F	1	46	46	43	41	41	42	42	43	44	44	45	46	46	42	48
Saturation Tank °F	2	93	93	90	90	92	93	94	95	94	94	94	95	95	97	96
Heat Exchanger In °F	3	76	76	82	88	83	85	86	87	81	80	81	82	82	83	83
Heat Exchanger Out °F	4	44	44	44	44	44	45	45	47	47	48	50	49	48	49	50
Flowrator In °F	5	90	90	90	90	90	91	93	94	93	94	98	94	95	95	95
Suit In °F	6	47	47	45	45	47	46	46	46	50	48	50	49	50	50	50
Dew Point, Suit In °F		36		37	37	37.5	37.5	36.5		37.5	38.5	40.5	41	42	42	
Suit Out °F	7	85	85	84	84	84	84	84	84	84	84	84	84	85	85	85
Dew Point, Suit Out °F		66		67	66	67.5	60	57		52.5	51.5	53.5	50	52	51.5	
Saturation Tank Pressure "Hg A.		29.8	29.8	25.8	24.5	24.5	24.5	23.8	14.0	13.5	13.2	13.5	13.5	13.5	13.5	13.5
Flowrate, Suit Ventilation		12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
Suit/Cabin ΔP "H_2O		2.0	2.2	2.8	2.0	2.0	2.0	2.5	4.2	4.2	4.0	4.4	4.0	4.2	4.0	6.0
Tank Altitude ft		6K	10K	10K	10K	10K	10K	13K	29K	34K	34K	34K	34K	34K	34K	34K
Tank Temp °F			82°				82°		75°		80°				81°	
Treadmill Start/Stop																START
Suit In/Out ΔP In. H_2O						3.8	3.8	4.2	3.8	4.4	5.5	2.8	3.2	4.2	4.0	1.8
O_2 Consumption (L/min)																
CO_2 Production (L/min)																
Pulse Rate																
Blood Pressure																
Respiration Rate																
Body Temperature																
Comfort Level																
Remarks:																
H_2O from Heat Exchanger			20cc				110cc				175 cc				188 cc	

	Wt. Before Test	Wt. after Test	Time On Bottle
O_2 Bottle #1			
O_2 Bottle #2			
O_2 Bottle #3			

Garment Weight, gm
Before Test 373
After Test

ALTITUDE EQUIPMENT DIVISION
CALCULATED
RECORDED
DRAWN
CHECKED
APPROVED

PRESSURE SUIT VENTILATION TEST

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

Date 6-26-62, 1962

RUN NUMBER 47

TIME	DEW POINT °F IN	DEW POINT °F OUT	PRESS. ABS. in. Hg	SUIT TEMP °F IN No. 6	SUIT TEMP °F OUT No. 7
4:47	36	66	29.8	47	83
4:55	37	67	20.5	45	84
5:00	37	66	20.5	46	84
5:05	37.5	64.5	20.5	45	84
5:10	37.5	60	20.5	46	84
5:15	36.5	57	20.5	47	84
5:25	37.5	52.5	7.3	49	83
5:30	38.5	51.5	7.3	49	84
5:35	40.5	53.5	7.3	49	84
5:40	41	50	7.3	52	84
5:45	42	52	7.3	50	85
5:50	42	51.5	7.3	51	85
5:55	41.5	53.5	7.3	51	85
5:56			TREADMILL ON		
6:00	43.5	60	7.3	51	86

PAGE NO. 2

Date 6-26-62, 1962

RUN NUMBER 47

TIME	DEW POINT °F IN	DEW POINT °F OUT	PRESS. ABS. in. Hg	SUIT TEMP °F IN	SUIT TEMP °F OUT
6:05	43	64.5	7.3	53	87
6:10	44	68.5	7.3	54	87
6:15	45	71.5	7.3	52	87.5
6:20	45.5	73	7.3	54	87.5
6:25	46.5	74	7.3	55	87.5
6:26			TREADMILL OFF		
6:37	48.5	78.5	29.8	56	89

Experiment No. 48
Test Subject Dick Betts
Altitude 34,000 ft
Treadmill Speed 2 mph

Suit Ventilation Rate 12 cfm
Dew Point Temperature 50°F
Suit Inlet Temperature 50°F

8:28 take off

DAT June 26, 1962
BAR

Time	Strip Chart #	8:30	8:35	8:40	8:45	8:50	8:55	9:00	9:05	9:10	9:15	9:20	9:25	9:30
Water Tank (Chiller) °F	1	40	42	41	42	42	42	42	43	43	43	45	44	
Saturation Tank °F	2	89	82	81	82	84	86	86	89	89	91	91	87	
Heat Exchanger In °F	3	87	82	78	77	76	76	75	77	76	79	80	76	
Heat Exchanger Out °F	4	45	46	46	46	45	45	46	46	46	47		47	
Flowrator In °F	5	92	85	81	81	82	85	85	88	88	89		91	
Suit In °F	6	45	46	46	46	45	45	45	46	46	48		47	
Dew Point, Suit In °F		39	40.5											
Suit Out °F	7	83	84	84	89	84	84	84	84	84	84		86	
Dew Point, Suit Out °F		56.5	56											
Saturation Tank Pressure "Hg A.		25	24	24	24.1	24	16	11	11.2	11.2	11.3		10.9	
Flowrate, Suit Ventilation cfm		12	12	12	12	12	12	12	12	12	12		12	
Suit/Cabin ΔP "H_2O		3	3	2.2	2.4	2.0	5.5	4.5	3.6	3.5	3.6		3.1	
Tank Altitude ft		10K	10K	10K	10K	10K	29K	34K	34K	34K	34K		34K	
Cabin Temp														
Treadmill Start/Stop														
O_2 Consumption (L/min)														
CO_2 Production (L/min)														
Pulse Rate														
Blood Pressure														
Respiration Rate														
Body Temperature														
Comfort Level														
Remarks:														
Heat Exchanger						220		140			140			

Test aborted at 9:30 pm due to extreme eye irritation and headache of test subject Dick Betts.

	Wt. Before Test	Wt. after Test	Time On Bottle
O_2 Bottle #1			
O_2 Bottle #2			
O_2 Bottle #3			

Garment Weight
Before Test
After Test

ALTITUDE EQUIPMENT DIVISION
CALCULATED
RECORDED
DRAWN
CHECKED
APPROVED

PRESSURE SUIT VENTILATION TEST

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

Date 6-26, 1962

RUN NUMBER 48

TIME	DEW POINT °F IN	DEW POINT °F OUT	PRESS. ABS. in. Hg	SUIT TEMP °F IN	SUIT TEMP °F OUT
8:23	44.5	68	29.8	48	79
8:25	42.5	66	29.8	45	85
8:32	39	56.5	20.3	46	83
8:35	40.5	56	20.3	45	83
8:40	42	56	20.3	45	81
8:45	45	54.5	20.3	45	81
		DEW POINT INTERRUPTED DUE TO MOISTURE			
		IN DEW POINT LINES			
	53	48			
9:15	50	48.5	6.8	46	84
9:20	55.5	50			
9:25	45	52	7.1	47	86
9:30	45	59.5	7.1	47	86

Experiment No. 49

Test Subject Tom Dunne

Altitude 34,000 Ft

Treadmill Speed 2 mph

Suit Ventilation Rate 12 cfm

Dew Point Temperature 50°F

Suit Inlet Temperature 50°F

DAT June 27, 1962

BAR 29.75 in. Hg

Time	Strip Chart #	9:45	9:50	10:10	10:20	10:30	10:35	10:40	10:45	10:50	10:55	11:00	11:05	11:10	11:25
Water Tank (Chiller) °F	1	38	39	40	42	42	43	43	43	44	44	44	45	46	45
Saturation Tank °F	2	92	98	97	93	92	91	91	91	91	91	91	92	92	96
Heat Exchanger In °F	3	79	82	91	87	86	84	84	84	84	84	84	84	84	86
Heat Exchanger Out °F	4	42	43	46	50	49	47	48	48	48	49	50	50	50	52
Flowrator In °F	5	89	89	96	93	92	91	91	91	91	91	91	91	91	94
Suit In °F	6	43	44	46	50	48	47	48	48	48	49	50	50	50	52
Dew Point, Suit In °F															
Suit Out °F	7	82	82	82	83	83	83	84	85	86	87	87	87	87	90
Dew Point, Suit Out °F															
Saturation Tank Pressure "Hg A.		23	23	9.8	9.8	9.8	9.8	9.8	918	9.8	9.8	9.8	9.8	9.8	
Flowrate, Suit Ventilation, cfm			12	12	12	12	12	12	12	12	12	12	12	12	
Suit/Cabin ΔP "H_2O		2.0	2.0	3.5	3.7	3.7	4.0	4.0	3.8	3.8	3.8	3.9	4.0	4.0	
Tank Altitude ft		10K	10K	34K	34K	34K	34K	34K	34K	34K	34K	34K	34K	34K	
Tank Temp °F		76		75			78			78		78		88	
Treadmill Start/Stop															
Suit In/Out ΔP In. H_2O		2.0	2.0	2.0	2.0	2.0	2.4	2.4	2.0	2.3	2.3	2.3	2.3	2.3	
O_2 Consumption (L/min)															
CO_2 Production (L/min)															
Pulse Rate															
Blood Pressure															
Respiration Rate															
Body Temperature															
Comfort Level															
Remarks: Heat Exchanger Drain Out (Total cc)		50		220			460			650			825		938

	Wt. Before Test	Wt. after Test	Time On Bottle	Garment Weight
O_2 Bottle #1				Before Test
O_2 Bottle #2				
O_2 Bottle #3				After Test

ALTITUDE EQUIPMENT DIVISION

CALCULATED

RECORDED

DRAWN

CHECKED

APPROVED

AIRESEARCH MANUFACTURING CO
LOS ANGELES CALIFORNIA

Date 6-27, 1962

BAR 29.75

RUN NUMBER 49

TIME	DEW POINT °F IN	DEW POINT °F OUT	PRESS. ABS. in. Hg	SUIT TEMP °F IN	SUIT TEMP °F OUT
10:10	38	46	7.2 "Hg A	46	81
10:15	39	45	7.2 "Hg A	46	82
10:26	42	46	7.2 "Hg A	49	83
10:30	42	48.5	7.2 "Hg A	48	83
10:35	38.5	46	7.2 "Hg A	46	83
10:40	41.0	53.0	7.2 "Hg A	47	85
10:45	43	56.5	7.2 "Hg A	48	85
10:50	42	68.0	7.2 "Hg A	49	86
10:57	44	68.0	7.2 "Hg A	50	87
11:00	44	72.0	7.2 "Hg A	50	87
11:05	44	72.0	7.2 "Hg A	50	87
11:10	45	73.0	7.2 "Hg A	51	86

Experiment No. 50
Test Subject André Kaz
Altitude 34,000 Ft
Treadmill Speed 2 mph

Suit Ventilation Rate 10 cfm
Dew Point Temperature 50°F
Suit Inlet Temperature 50°F

DATE June 27, 1962
BAR 29.72 in. Hg

Time	Strip Chart #	1:40	1:45	1:50	1:55	2:00	2:05	2:10	2:15	2:20	2:25	2:30	2:35	2:40	2:45	2:50
Water Tank (Chiller) °F	1	40	38	39	38	40	40	41	40	40	42	42	42	43	43	44
Saturation Tank °F	2	100	96	95	96	98	99	101	100	99	97	97	95	95	95	95
Heat Exchanger In °F	3	80	90	89	89	88	88	90	88	86	86	89	87	87	88	87
Heat Exchanger Out °F	4	44	44	45	46	49	50	50	52	52	50	50	54	53	53	53
Flowrator In °F	5	99	96	98	94	95	96	99	99	99	97	97	95	94	94	95
Suit In °F	6	46	44	48	48	48	50	50	50	50	50	49	52	52	53	52
Dew Point, Suit In °F			33.0	35.0	36.0	37.0	40.0		41.0	43.0	43.0	41.0	44.0	44.0	45.0	45.0
Suit Out °F	7	79	84	84	84	84	85	84	84	84	85	85	85	85	85	87
Dew Point, Suit Out °F			60.0	58.0	57.0	56.0	56.0		51.0	51.0	50.0	49.0	51.0	51.0	56.0	56.0
Saturation Tank Pressure "Hg A		26.0	24.8	24.5	24.5	24.5	24.5	14.2	13.5	13.8	10.5	10.5	10.2	10.2	10.2	10.4
Flowrate, Suit Ventilation, cfm		10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Suit/Cabin ΔP "H_2O		1.0	1.5	1.5	1.8	1.8	1.2	3.0	3.0	3.0	3.2	2.8	2.8	3.0	2.8	3.0
Tank Altitude ft		5K	10K	10K	10K	10K	10K	32K	34K	34K	34K	34K	34K	34K	34K	34K
Tank Temp °F		82°				80°			78°			80°			81°	
Treadmill Start/Stop															START	MOVING
Suit In/Out ΔP, In. H_2O		1.4	1.5	1.5	1.8	1.5	1.5	2.2	2.0	2.0	2.0	1.8	1.8	1.8	1.5	2.0
O_2 Consumption (L/min)																
CO_2 Production (L/min)																
Pulse Rate																
Blood Pressure																
Respiration Rate																
Body Temperature																
Comfort Level																
Remarks:																
Heat Exchanger H_2O Drain Out (cc Total)						130 cc			130cc			160cc			150cc	

	Wt. Before Test	Wt. after Test	Time On Bottle
O_2 Bottle #1			
O_2 Bottle #2			
O_2 Bottle #3			

Garment Weight, gm
Before Test 659
After Test 663

ALTITUDE EQUIPMENT DIVISION
CALCULATED
RECORDED
DRAWN
CHECKED
APPROVED

PRESSURE SUIT VENTILATION TEST

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

53-1018-R

Experiment No. 50
Test Subject André Kas
Altitude 34,000 ft
Treadmill Speed 2 mph

Suit Ventilation Rate 10 cfm
Dew Point Temperature 50°F
Suit Inlet Temperature 50°F

DATE June 27, 1962
BAR 29.72 in. Hg

Time	Strip Chart #	2:55	3:00	3:05	3:10	3:15	3:20	3:25	3:30	3:35	3:40 (SL)
Water Tank (Chiller) °F	1	44	46	45	45	46	47	46	50	49	
Saturation Tank °F	2	96	96	97	97	97	97	98	98	101	
Heat Exchanger In °F	3	88	88	89	89	87	88	90	90	91	
Heat Exchanger Out °F	4	54	52	52	52	54	55	53	55	52	
Flowrator In °F	5	95	95	95	96	96	96	96	96	97	
Suit In °F	6	52	52	52	52	52	54	53	55	54	
Dew Point, Suit In °F		46.0	46.0	45.0	45.0	46.0	46.0	48.0			
Suit Out °F	7	88	88	88	88	88	88	87	86	87	
Dew Point, Suit Out °F		64.0	67.0	71.0	[illegible]	74.0	76.0	75.0			
Saturation Tank Pressure "Hg A.		10.2	[illegible]	10.4	[illegible]	10.4	10.2	10.2	13.0	18.5	
Flowrate, Suit Ventilation cfm		10	10	10	10	10	10	10	10	10	
Suit/Cabin ΔP "H_2O		3.2	3.2	[illegible]	[illegible]	3.2	3.0	3.2	1.5	1.0	
Tank Altitude ft		34K	34K	[illegible]	[illegible]	34K	34K	34K	23K	17K	
Tank Temp °F			[illegible]	[illegible]	[illegible]	[illegible]		83°			90°
Treadmill Start/Stop				[illegible]				STOP			
Suit In/Out ΔP In. H_2O		2.5	2.5	2.5	2.5	3.0	2.5	2.0	1.0	1.0	
O_2 Consumption (L/min)											
CO_2 Production (L/min)											
Pulse Rate											
Blood Pressure											
Respiration Rate											
Body Temperature											
Comfort Level											

Remarks:
H_2O From Heat Exchanger [illegible]cc [illegible]cc 260 cc

	Wt. Before Test	Wt. after Test	Time On Bottle
O_2 Bottle #1			
O_2 Bottle #2			
O_2 Bottle #3			

Garment Weight, gm.
Before Test 1,659
After Test 1,643

ALTITUDE EQUIPMENT DIVISION
CALCULATED
RECORDED
DRAWN
CHECKED
APPROVED

PRESSURE SUIT VENTILATION TEST

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

Date 6-27, 1962

PAGE NO. 1

RUN NUMBER 50

TIME	DEW POINT °F IN	DEW POINT °F OUT	PRESS. ABS. in. Hg	SUIT TEMP °F IN	SUIT TEMP °F OUT
1:45	33	60	20.5	45	83
1:50	35	58	23.4	46	84
1:55	36	57	23.5	47	84
2:00	37	56	23.5	47	84
2:05	40	56	23.5	49	85
2:15	41	51	7.3	50	84
2:20	43	51	7.2	51	84
2:25	43	50	7.2	51	84
2:30	41	49	7.2	49	85
2:35	44	51	7.2	51	85
2:40	44	51	7.2	51	85
2:45	45	56	7.2	52	86
2:48			TREADMILL ON		
2:50	45	56	7.2	54	87
2:55	46	64	7.2	54	88
3:00	46	67	7.2	51	88
3:05	45	71	7.2	52	88

Date 6-27, 1962

PAGE NO. 2

RUN NUMBER 50 (cont.)

TIME	DEW POINT °F IN	DEW POINT °F OUT	PRESS. ABS.	SUIT TEMP °F IN	SUIT TEMP °F OUT
3:10	46	line closed	7.2	52	88
3:15	46	74	7.2	53	88
3:20	46	76	7.2	54	87
3:23		76		54	88
3:25	48	75	7.2	54	87
3:25			TREADMILL OFF		

Experiment No. 51
Test Subject David Vogl
Altitude 19 K ft
Treadmill Speed 2 mi. (45 min.)

Suit Ventilation Rate 12 CFM (460)
Dew Point Temperature 50° F
Suit Inlet Temperature [illegible]

DATE 6-27-62
BAR 29.71 in. Hg

Time		Strip Chart #	4:50	4:55	5:00	5:05	5:10	5:15	5:20	5:25	5:30	5:35	5:40	5:45	5:50	5:55	6:00
Water Tank (Chiller)	°F	1	40	40	41	41	42	42	43	44	43	45	45	44	45	48	46
Saturation Tank	°F	2	102	102	92	92	91	90	90	90	92	93	94	94	94	94	94
Heat Exchanger In	°F	3	89	90	92	86	86	85	85	83	84	85	85	85	86	86	86
Heat Exchanger Out	°F	4	48	49	52	51	51	51	52	51	53	54	53	54	55	50	50
~~Evaporator Out~~ Flowrator In	°F	5	101	100	91	91	91	90	90	90	91	92	92	92	93	93	93
Suit In	°F	6	49	50	52	50	50	51	50	51	51	52	53	53	54	50	50
Dew Point, Suit In	°F		40.5		47.5	48.5	50.5	51.0	51.5	49.5	50.0	51.5	52.5	52.5	52.0	48.5	47.5
Suit Out	°F	7	85	84	83	83	83	82	83	83	84	84	85	85	85	85	85
Dew Point, Suit Out	°F		72.0	[illegible]	69.5	64.0	61.0	58.0	57.0	56.0	65.0	70.0	75.0	75.0	75.0	77.0	76.0
Saturation Tank Pressure	"Hg A		24.5	21.2	21.2	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0
Flowrate, Suit Ventilation	cfm		12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
Suit/Cabin ΔP	"H_2O		2.2	2.5	4.3	4.5	5.5	5.0	6.5	4.5	4.5	4.5	5.0	4.5	5.0	4.8	4.5
Tank Altitude	ft		9K	19K	19K	19K	19K	19K	19K	19K	19K	19K	19K	19K	19K	19K	19K
Tank Air Temp	°F		82°				81°			82°			82°			82°	
Treadmill Start/Stop										START	MOVING	MOVING	MOVING	MOVING	MOVING	MOVING	MOVING
Suit IN/OUT ΔP	"H_2O		3.0	0.0	5.0	6.0	4.0	6.0	5.5	5.5	5.5	6.0	6.0	4.5	5.5	5.5	5.5
O_2 Consumption (L/min)																	
CO_2 Production (L/min)																	
Pulse Rate																	
Blood Pressure																	
Respiration Rate																	
Body Temperature																	
Comfort Level																	

Remarks:

H_2O from Heat Exchanger										160c.c.			150c.c.			170c.c.

	Wt. Before Test	Wt. after Test	Time On Test
O_2 Bottle #1			
O_2 Bottle #2			
O_2 Bottle #3			

ALTITUDE EQUIPMENT DIVISION

CALCULATED		
RECORDED		
DRAWN		
CHECKED		
APPROVED		

PRESSURE SUIT VENTILATION T ST

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

SS-1018-R

Experiment No. 51

Test Subject David Vogl

Altitude 19K ft

Treadmill Speed 2 mi. (45 min.)

Suit Ventilation Rate 12 CFM [illegible]

Dew Point Temperature [illegible]

Suit Inlet Temperature 50°

DATE 6-27-62

BAR 29.71 [illegible]

Time	Strip Chart #	O_2
Water Tank (Chiller) °F	1	47
Saturation Tank °F	2	94
Heat Exchanger In °F	3	86
Heat Exchanger Out °F	4	51
Reheater Out °F	5	94
Suit In °F	6	81
Dew Point, Suit In °F		46.5
Suit Out °F	7	85
Dew Point, Suit Out °F		77.0
Saturation Tank Pressure "Hg A		19.0
Flowrate, Suit Ventilation cfm		12
Suit/Cabin ΔP "H_2O		5.0
Tank Altitude ft ft		19K
Tank Air Temp °F		83°
Treadmill Start/Stop		STOP
Suit IN/OUT ΔP H_2O		4.0
O_2 Consumption (L/min)		
CO_2 Production (L/min)		
Pulse Rate		
Blood Pressure		
Respiration Rate		
Body Temperature		
Comfort Level		

Remarks:

H_2O from Heat Exchanger

	Wt. Before Test	Wt. [illegible]
O_2 Bottle #1		
O_2 Bottle #2		
O_2 Bottle #3		

ALTITUDE EQUIPMENT DIVISION

PRESSURE SUIT VENTILATION TEST

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

Date 6-27, 1962

RUN NUMBER 51

TIME	DEW POINT °F IN	DEW POINT °F OUT	PRESS. ABS. in. Hg	SUIT TEMP °F IN	SUIT TEMP °F OUT
4:51	40.5	72	29.8	51	85
4:52			UP		
5:00	47.5	69.5	13.9	52	83
5:08	51	64	14.2	51	83
5:12	50.5	61	14.2	51	82
5:15	51	58	14.3	50	82
5:20	51.5	57	14.2	52	82
5:25	49.5	56	14.2	52.5	82
5:27			TREADMILL ON		
5:30	50	63	14.2	53	84
5:35	51.5	70	14.2	52.5	85
5:40	52.5	75	14.2	52.5	86
5:45	52.5	75	14.3	53	85
5:50	52	75	14.2	53.5	85
5:55	48.5	77	14.2	52	85
6:00	47.5	76	14.2	50	85
6:05	46.5	77	14.3	50	85

WATER FROM SUIT INLET

6:06 Treadmill Off

Experiment No. 52
Test Subject Dick Betts
Altitude 34,000 Ft.
Treadmill Speed 2 mph

Suit Ventilation Rate 10 cfm
Dew Point Temperature 50°F
Suit Inlet Temperature 50°F

DATE June 27, 1962
BAR 29.72 In. Hg

Time	Strip Chart #	8:35	8:40	8:45	8:50	8:55	9:00	9:05	9:10	9:15	9:20	9:25	9:30	9:35	9:40	9:45
Water Tank (Chiller) °F	1	40	41	41	42	43	43	43	43	43	44	44	45	46	46	46
Saturation Tank °F	2	110	107	[illegible]	104	105	105	103	103	104	103	102	102	102	102	102
Heat Exchanger In °F	3	98	97	95	104	103	103	104	104	104	103	103	103	100	100	100
Heat Exchanger Out °F	4	47	47	50	50	50	50	51	51	51	53	50	50	50	50	50
Flowrator In °F	5	107	106	103	103	101	101	104	103	103	102	100	100	99	99	99
Suit In °F	6	47	49	51	50	50	50	51	51	51	53	50	50	50	50	50
Dew Point, Suit In °F																
Suit Out °F	7	84	83	85	85	85	85	85	85	85	85	85	85	85	85	85
Dew Point, Suit Out																
Saturation Tank Pressure "Hg A		36.5	30.0	25.0	17.0	13.0	26.5	26.5	26.8	15.0	12.0	12.0	12.0	12.0	12.0	12.0
Flowrate, Suit Ventilation, cfm		10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Suit/Cabin ΔP "H_2O		3.0	3.0	[illegible]	[illegible]	3.0	0.05	0.05	3.0	3.5	3.3	3.3	3.4	3.4	3.4	3.0
Tank Altitude Ft		5K	10K	20K	20K	25K	10K	10K	12K	30K	34K	34K	34K	34K	34K	34K
Tank Temp °F		81			74				80		78		80			
Treadmill Start/Stop																
O_2 Consumption (L/min)																
CO_2 Production (L/min)																
Pulse Rate																
Blood Pressure																
Respiration Rate																
Body Temperature																
Comfort Level																
Remarks:																
Heat Exchanger H_2O Out °F				210					245		125		180			

	Wt. Before Test	Wt. after Test	Time On Bottle	Content Weight
O_2 Bottle #1				Before Test
O_2 Bottle #2				
O_2 Bottle #3				After Test

ALTITUDE EQUIPMENT DIVISION		
CALCULATED		
RECORDED		
DRAWN		
CHECKED		
APPROVED		

PRESSURE SUIT VENTILATION TEST

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

SS-1018-R
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Experiment No. 52
Test Subject Dick Betts
Altitude 34 K ft
Treadmill Speed 2 mph

Suit Ventilation Rate 10 cfm (34%)
Dew Point Temperature 50°F
Suit Inlet Temperature 50°F

DAT June 27, 1962
BAR 29.72 in. Hg

Time	Strip Chart #	9:50	9:55	10:00	10:05	10:10	10:15	10:20	10:25	10:30	10:35	10:40	10:45
Water Tank (Chiller) °F	1	46	47	46	46	47	47	47	47	47	47		
Saturation Tank °F	2	101	101	100	100	100	100	100	100	100	100		
Heat Exchanger In °F	3	101	101	100	100	100	100	100	100	100	100		
Heat Exchanger Out °F	4	51	51	50	50	51	51	51	51	52	52		
Flowrator In °F	5	100	100	99	99	99	99	99	99	99	99		
Suit In °F	6	51	51	50	50	51	51	51	51	52	52		
Dew Point, Suit In °F													
Suit Out °F	7	86	87	87	87	87	88	87	87	87	87		
Dew Point, Suit Out °F													
Saturation Tank Pressure "Hg A.		12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.2	12.2	12.0		
Flowrate, Suit Ventilation, cfm		10	10	10	10	10	10	10	10	10	10		
Suit/Cabin ΔP "H_2O		3.0	3.0	3.0	3.0	3.0	3.3	3.3	3.3	3.5	4.0		
Tank Altitude Ft		34K	34K	34	34	34	34	34	34	34	34		
Tank Temp °F			80	80		81		81		81	82		
Treadmill Start/Stop		START									STOP		
O_2 Consumption (L/min)													
CO_2 Production (L/min)													
Pulse Rate													
Blood Pressure													
Respiration Rate													
Body Temperature													
Comfort Level													
Remarks: Heat Exchanger H_2O Out cc			180	130		100		120		100	40		

	Wt. Before Test	Wt. after Test	Time On Bottle	Garment Weight
O_2 Bottle #1				Before Test
O_2 Bottle #2				
O_2 Bottle #3				After Test

ALTITUDE EQUIPMENT DIVISION
CALCULATED
RECORDED
DRAWN
CHECKED
APPROVED

AIRESEARCH MANUFACTURING CO
LOS ANGELES CALIFORNIA

PAGE NO. 1

Date 6-27, 1962

RUN NUMBER 52

TIME	DEW POINT °F IN	DEW POINT °F OUT	PRESS. ABS. In. Hg	SUIT TEMP °F IN	SUIT TEMP °F OUT
8:15	49.5	76	29.7	60	87
8:23	41	70	29.7	48	85
8:33	40	60	29.7	47	84
8:36			UP		
8:40	42	57	20.7	49	83
8:45	43.5	56	20.7	50	83
8:47			UP		
		Return to 10,000 For Biomedical repair			
9:09			UP		
9:17	47.5	56	7.1	52	84
9:20	47	56	7.1	52	84
9:25	44.5	52.5	7.1	50	85
9:30	44.5	52.5	7.1	50	85
9:35	45	52.5	7.1	50	85
9:40	44.5	52.5	7.1	50	86
9:45	44.5	52.5	7.1	51	86
9:49			TREADMILL ON		

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Date 6-27, 1962

RUN NUMBER 52

TIME	DEW POINT °F IN	DEW POINT °F OUT	PRESS. ABS. In. Hg	SUIT TEMP °F IN	SUIT TEMP °F OUT
9:50	45	61	7.1	51	86
9:55	45	64.5	7.1	52	87
10:00	45	66.5	7.1	51	87
10:05	46	72.5	7.1	51	87.5
10:10	45.5	75	7.1	51.5	87.5
10:15	46	77.5	7.1	51	87.5
10:20	46	79	7.1	52	88
10:25	46.5	79.5	7.1	51.5	87.5
10:30	46.5	79.5	7.1	52	87.5
10:33			TREADMILL OFF		

Experiment No. 53
Test Subject Thomas Dunne
Altitude 34 K Ft
Treadmill Speed 2 mph

Suit Ventilation Rate 8 cfm (26%)
Dew Point Temperature 50°F
Suit Inlet Temperature 50°F

DATE June 28, 1962
BAR 29.84 in. Hg

Time	Strip Chart #	11:05	11:10	11:15	11:20	11:25	11:30	11:35	11:40	11:45	11:50	11:55	12:00	12:05	12:10	12:15
Water Tank (Chiller) °F	1	40	39	39	41	41	41	42	43	41	41	41	41	42	42	43
Saturation Tank °F	2	102	98	93	89	86	84	83	82	84	87	91	93	96	98	100
Heat Exchanger In °F	3	77	98	93	89	86	84	83	82	84	87	91	93	96	98	100
Heat Exchanger Out °F	4	44	44	44	46	46	45	45	47	47	45	47	46	48	48	49
Flowrator In °F	5	99	98	94	90	87	85	83	82	82	84	87	91	94	96	98
Suit In °F	6	47	45	44	46	48	46	47	47	47	46	47	48	48	49	49
Dew Point, Suit In °F																
Suit Out °F	7	87	83	82	82	82	82	83	83	84	85	86	86	86	87	87
Dew Point, Suit Out °F																
Saturation Tank Pressure "Hg A.		31.4	25.5	8.8	8.9	8.9	8.9	8.8	11.3	11.2	11.3	11.6	10.5	10.7	10.7	10.8
Flowrate, Suit Ventilation		6.5	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Suit/Cabin ΔP "H_2O		0	2.5	2.2	2.5	2.3	2.3	2.4	2.6	2.5	2.7	3.0	3.0	2.7	2.7	2.7
Tank Altitude Ft		SL	20K	34K	34K	34K	34K	34K	34K	34K	34K	34K	34K	34K	34K	34K
Tank Temp °F		81		72		78				11:43		79				
Treadmill Start/Stop																
Suit ΔP In. H_2O		0	0.5	0	0.5	0	0.3	0.1	0.8	0.6	1.0	1.0	1.0	1.5	1.5	1.2
O_2 Consumption (L/min)																
CO_2 Production (L/min)																
Pulse Rate																
Blood Pressure																
Respiration Rate																
Body Temperature																
Comfort Level																
Remarks:												105				140
H_2O From Heat Exchanger		140				220										

	Wt. Before Test	Wt. after Test	Time On Bottle
O_2 Bottle #1			
O_2 Bottle #2			
O_2 Bottle #3			

Garment Weight Before Test 360
After Test

ALTITUDE EQUIPMENT DIVISION
CALCULATED
RECORDED
DRAWN
CHECKED
APPROVED

PRESSURE SUIT VENTILATION TEST

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

Experiment No. 53
Test Subject Thomas Dunne
Altitude 34K Feet
Treadmill Speed 2 mph

Suit Ventilation Rate 8 cfm (76%)
Dew Point Temperature 50°F
Suit Inlet Temperature 50°F

DATE June 28, 1962
BAR

Time		Strip Chart #	12:20	12:25	12:30	12:35	12:40	12:41
Water Tank (Chiller)	°F	1	42	43	45	44	44	
Saturation Tank	°F	2	101	101	101	105	105	
Heat Exchanger In	°F	3	101	101	106	108	108	
Heat Exchanger Out	°F	4	51	48	48	47	47	
Flowrator In	°F	5	99	100	100	100	103	
Suit In	°F	6	51	50	49	49	50	
Dew Point, Suit In	°F							
Suit Out	°F	7	87	86	86	85	88	
Dew Point, Suit Out	°F							
Saturation Tank Pressure	"Hg A.		30.6	30.5	30.7	29.4	29.5	
Flowrate, Suit Ventilation	cfm		8.0	8.0	8.0	8.0		
Suit/Cabin ΔP	"H_2O		2.5	2.5	2.5	2.5	0.5	
Tank Altitude	Ft		34K	34K	34K	34K	34K	81
Tank Temp	°F				90		98	89
Treadmill Start/Stop					11:28			
Suit ΔP	In. H_2O		0.5	0.5	1.0	1.0	0.5	
O_2 Consumption	(L/min)							
CO_2 Production	(L/min)							
Pulse Rate								
Blood Pressure								
Respiration Rate								
Body Temperature								
Comfort Level								
Remarks:								
H_2O From Heat Exchanger					150			45

	Wt. Before Test	Wt. after Test	Time On Bottle
O_2 Bottle #1			
O_2 Bottle #2			
O_2 Bottle #3			

Garment Weight
Before Test
After Test

ALTITUDE EQUIPMENT DIVISION		
CALCULATED		
RECORDED		
DRAWN		
CHECKED		
APPROVED		

PRESSURE SUIT VENTILATION TEST

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

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Date 6-28, 1962

OBSERVER: R. Godson

RUN NUMBER 53

TIME	DEW POINT °F IN	DEW POINT °F OUT	PRESS. ABS.	SUIT TEMP °F IN	SUIT TEMP °F OUT
11:05			Start Run		
10:55	34	81	SEA LEVEL 29.84" Hg A	47	87
11:15	33	63	7.25" Hg A	44	82
11:20	38	57	7.20" Hg A	46	82
11:25	36	57	7.20" Hg A	47	82
11:30	35	55	7.20" Hg A	47	82
11:35	35	53	7.20" Hg A	47	83
11:42	34	51	7.20" Hg A	47	83
11:43			Treadmill on		
11:45	36	64.5	7.20" Hg A	47	84
11:50	35	68	7.20" Hg A	47	85
11:55	33	73	7.20" Hg A	47	85
12:00	35	76	7.20" Hg A	47	86
12:05	35	77	7.20" Hg A	49	87
12:10	37	78	7.20" Hg A	49	87
12:15	36.5	79	7.20" Hg A	49	87
12:20	39.0	80	7.20" Hg A	50	87
12:25	36	pen out of ink	7.20" Hg A	49	86
12:32	36	72	7.20" Hg A	49	86

Experiment No. 54
Test Subject Andre Kaz
Altitude 34,000 ft
Treadmill Speed 2 MPH (45 min.)

Suit Ventilation Rate [illegible]
Dew Point Temperature 50° F
Suit Inlet Temperature 50° F

DATE 6-28-62
BAR 29.89 In. Hg

Time	Strip Chart	12:55	14:00	14:05	14:10	14:15	14:20	14:25	14:30	14:35	14:40	14:45	14:50	14:55	15:00	15:05
Water Tank (Chiller) °F	1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	40	41	41	42	42	43	43	45	44	46
Saturation Tank °F	2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	101	101	101	102	102	102	102	102	102	102
Heat Exchanger In °F	3	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	101	101	101	102	102	102	102	102	102	102
Heat Exchanger Out °F	4	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	45	44	47	46	47	48	46	46	48	50
Flowrator In °F	5	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	99	100	100	100	100	100	100	100	100	100
Suit In °F	6	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	47	48	47	48	49	49	49.5	50	52
Dew Point, Suit In °F																
Suit Out °F	7	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	83	83	83	84	84	85	86	87	87	87
Dew Point, Suit Out																
Saturation Tank Pressure "H₂O		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	10.0	10.0	10.0	10.2	10.0	10.0	10.0	10.0	10.0	10.0
Flowrate, Suit Ventilation (CFM)		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	8CFM	8CFM	8CFM	8CFM	8CFM	8	8	8	8	8
Suit/Cabin ΔP "H₂O		1.5	[illegible]	[illegible]	[illegible]	[illegible]	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
Tank Altitude Ft		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	34K	34K	34K	34K	34K	34K	34K	34K	34K	34K
Suit ΔP in H₂O		0.7	[illegible]	[illegible]	[illegible]	[illegible]	0.3	0.7	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Treadmill Start/Stop																
Cabin Temp. °F		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	80	[illegible]	[illegible]	[illegible]	81
O_2 Consumption (L/min)																
CO_2 Production (L/min)																
Pulse Rate																
Blood Pressure																
Respiration Rate																
Body Temperature																
Comfort Level																
Remarks:																
H_2O from Heat Exchanger		80	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	430	[illegible]	[illegible]	[illegible]	720

	Wt. Before Test	Wt. After Test
O_2 Bottle #1		
O_2 Bottle #2		
O_2 Bottle #3		

ALTITUDE EQUIPMENT DIVISION
[illegible]
RECORDED
DRAWN
CHECKED
APPROVED

PRESSURE SUIT VENTILATION TEST

AIRESEARCH MANUFACTURING CO.
LOS ANGELES, CALIFORNIA

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Experiment No. 56

Test Subject Andre Kaz

Altitude 34,000 Ft

Treadmill Speed

Suit [illegible]

Dew Point [illegible]

Suit [illegible]

DATE 6-28-62

BAR 29.89 In.Hg

Time	Strip Chart [illegible]									
Water Tank (Chiller) °F										
Saturation Tank °F										
Heat Exchanger In °F										
Heat Exchanger Out °F										
Flowrater In °F										
Suit In °F										
Dew Point, Suit In °F										
Suit Out °F										
Dew Point, Suit Out °F										
Saturation Tank Pressure [illegible]										
Flowrate, Suit Ventilation [illegible]										
Suit/Cabin ΔP [illegible]										
Tank Altitude Ft										
Tank Temp. (°F)										
Treadmill Start/Stop										
Suit In/out ΔP in [illegible]										
O_2 Consumption (L/min)										
CO_2 Production (L/min)										
Pulse Rate										
Blood Pressure										
Respiration Rate										
Body Temperature										
Comfort Level										
Remarks:										
HEX H_2O Drain Out (cc)										

Wt. Before Test

O_2 Bottle #1

O_2 Bottle #2

O_2 Bottle #3

[illegible] VENTILATION [illegible]

[illegible] MANUFACTURING CO.

[illegible] CALIFORNIA

Date 6-28, 1962

OBSERVER: R. Godsor
BAR 29.89

RUN NUMBER 54

TIME	DEW POINT °F IN	DEW POINT °F OUT	PRESS. ABS.	SUIT TEMP °F IN	SUIT TEMP °F OUT
2:17			Reached 34 K		
2:20	31	50.5	7.20" Hg A	46	83
2:25	33	malfunction in instrument	7.20" Hg A	47	83
2:30	33	52	7.20" Hg A	47	83
2:35	34.5	52	7.20" Hg A	47	83
2:40	34.5	50.5	7.20" Hg A	48	84
2:45	36	53.5	7.20" Hg A	48	84
2:47			TREADMILL ON		
2:50	35.5	66	7.20" Hg A	48	85
2:55	36.5	70	7.20" Hg A	49	87
3:00	36.5	74	7.20" Hg A	51	87
3:05	37	76.5	7.20" Hg A	50	87
3:10	39	80	7.20" Hg A	51	88
3:15	37.5	79	7.20" Hg A	51	88
3:20	37	78	7.20" Hg A	50	88
3:25	38	79	7.20" Hg A	52	88
3:30	38	79	7.20" Hg A	51	87
3:32			TREADMILL OFF		
3:34	37.5	77.5	7.20" Hg A	52	87

Experiment No. 55

Test Subject David Vogl

Altitude 29,000 ft

Treadmill Speed 2 MPH

DATE 6-28-62

BAR

Time		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	5:45	5:50	5:55	6:00	6:15	6:20	6:25	6:30
Water Tank (Chiller)	°F	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	46	47	47	48	48	48	48	48
Saturation Tank	°F	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	98	98	98	98	98	98	98	98
Heat Exchanger In	°F	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	98	98	98	98	98	98	98	98
Heat Exchanger Out	°F	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	50	50	50	50	52	51	53	52
Flowrator In	°F	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	97	97	97	97	97	97	97	97
Suit In	°F	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	50	50	50	51	53	51	53	53
Dew Point, Suit In	°F	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]								
Suit Out	°F	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	82	82	82	80	83	83	84	84
Dew Point, Suit Out	°F	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]								
Saturation Tank Pressure	"Hg	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	18	18	18	18	18	18	18	18
Flowrate, Suit Ventilation	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	10	10	10	10	10	10	10	10
Suit/Cabin AP	"H_2O	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
Tank Altitude	Ft	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	19K'	19K'	19K'	19K'	19K'	19K'	19K'	19K'
Tank Temp.	°F	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	80			80			81
Treadmill Start/Stop		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]								
Suit In/out ΔP. In H_2O		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	5.0	5.0	
O_2 Consumption (L/min)		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]								
CO_2 Production (L/min)		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]								
Pulse Rate		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]								
Blood Pressure		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]								
Respiration Rate		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]								
Body Temperature		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]								
Comfort Level		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]								
Remarks:															
HEX H_2O Drain Out. (cc)		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	250			425

Wt. Before Test

O_2 Bottle #1

O_2 Bottle #2

O_2 Bottle #3

[illegible] VENTILATION TEST

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

Experiment No. 55 cont'd.

Test Subject David Vogl

Altitude 19,000 ft

Treadmill Speed 2 MPH

DATE 6-28-62

BAR 29.84 In. Hg

Time												
Water Tank (Chiller) °F												
Saturation Tank °F												
Heat Exchanger In °F												
Heat Exchanger Out °F												
Flowrator In °F												
Suit In °F												
Dew Point, Suit In °F												
Suit Out °F												
Dew Point, Suit Out												
Saturation Tank Pressure												
Flowrate, Suit Ventilation												
Suit/Cabin ΔP "H_2O												
Tank Altitude Ft												
Tank Temp °F												
Treadmill Start/Stop												
Suit In/Out ΔP_{O_2}												
O_2 Consumption (L/min)												
CO_2 Production (L/min)												
Pulse Rate												
Blood Pressure												
Respiration Rate												
Body Temperature												
Comfort Level												
Remarks												
HEX H_2O Drain Out (cc)												

Wt. Before Test

O_2 Bottle #1

O_2 Bottle #2

O_2 Bottle #3

Date 6-28, 1962

Page 1

RUN NUMBER 55

TIME	DEW POINT °F IN	DEW POINT °F OUT	PRESS. ABS. In. Hg	SUIT TEMP °F IN	SUIT TEMP °F OUT
4:52	36	72	29.7	50	84
4:53			Start Up		
			14.4		
5:00	71	64	Water in Inlet line		
5:05	72	61		47	81
5:10	73	58.5	14.4	47	81
5:15	78	56	14.4	48	81
5:20	79	57	14.4	48	81
5:24			Power Off		
5:35	78	60	14.4	51	82
5:45	77	57	14.4	50	82
5:46			Dew Point Line Heater Off		
5:50	73	56.5	14.4	50	82
6:00	69	54.5	14.3	52	82
6:05			Opened Inlet Dew point Line To Dry		
6:15	43.5	53.5	14.3	52	82.5
6:20	43	59	14.3	53	83

Date 6-28, 1962

RUN NUMBER 55

TIME	DEW POINT °F IN	DEW POINT °F OUT	PRESS. ABS. In. Hg	SUIT TEMP °F IN	SUIT TEMP °F OUT
6:21			Treadmill On		
6:25	43	62	14.3	51.5	84
6:30	44	63	14.3	52	84
6:35	44	63.5	14.4	53	85
6:40	44.5	68	14.3	54	85.5
6:45	44.5	73.5	14.3	52	84
6:50	45	73.5	14.3	57	88.5
6:55	44.5	74.5	14.3	55	87
7:00	44.5	74	14.3	54	86
7:05	44.5	74	14.3	54	86
7:06			Treadmill Off		

Experiment No. 56

Test Subject David Vogl

Altitude 19K Ft

Treadmill Speed 2 MPH

DATE 6-28-62

BAR 29.84 in. Hg

Time														
Water Tank (Chiller) °F						42	42	43	43	43	43	45	44
Saturation Tank °F						100	101	103	104	104	105	105	105
Heat Exchanger In °F						100	101	103	104	104	105	105	105
Heat Exchanger Out °F						47	52	52	45	47	47	47	49
Flow °F						98	100	97	101	101	102	103	103	103
Suit In °F						48	54	50	47	46	47	48	49	50
Dew Point, Suit In °F														
Suit Out °F						85	85	87	86	87	87	87	87	87
Dew Point, Suit Out °F														
Saturation Tank Pressure "Hg						19.8	19.8	19.8	21.5	21.4	21.3	21.3	21.3	21.3
Flowrate, Suit Ventilation CFM						8	8	8	8	8	8	8	8	8
Suit/Cabin ΔP "H₂O						2.0	2.0	2.0	2.0	2.0	2.0	2.5	2.5	2.3
Tank Altitude Ft						19K	19K	19K	19K	19K	19K	19K	19K	19K
Tank Temp °F						80	80		80		81		81	
Treadmill Start/Stop							Start							
Suit ΔP. in. H₂O						2.5	3.0	3.0	3.0	3.0	2.5	2.5	2.3
O_2 Consumption (L/min)														
CO_2 Production (L/min)														
Pulse Rate														
Blood Pressure														
Respiration Rate														
Body Temperature														
Comfort Level														
Remarks:														
Heat Ex. (H₂O Out) °F							310		440		500		600	
							Total		Total		Total		Total	

Wt. Before Test

O_2 Bottle #1

O_2 Bottle #2

O_2 Bottle #3

PRESSURE SUIT VENTILATION TEST

AIRESEARCH MANUFACTURING CO.
LOS ANGELES, CALIFORNIA

Experiment No. 56 cont'd

Test Subject David Vogl

Altitude 19K Ft

Treadmill Speed 2 MPH

DATE 6-28-62

BAR 29.84 In. Hg

Time	
Water Tank (Chiller) °F	
Saturation Tank °F	
Heat Exchanger In °F	
Heat Exchanger Out °F	
Flow °F	
Suit In °F	
Dew Point, Suit In °F	
Suit Out °F	
Dew Point, Suit Out	
Saturation Tank Pressure "Hg	
Flowrate, Suit Ventilation	
Suit/Cabin ΔP "H_2O	
Tank Altitude Ft	
Tank Temp °F	
Treadmill-Start/Stop	
Suit ΔP, In. H_2O	
O_2 Consumption (L/min)	
CO_2 Production (L/min)	
Pulse Rate	
Blood Pressure	
Respiration Rate	
Body Temperature	
Comfort Level	
Remarks	
Heat Ex. H_2O Out	

Wt. Before

O_2 Bottle #1

O_2 Bottle #2

O_2 Bottle #3

AIRESEARCH EQUIPMENT DIVISION

CALCULATED / RECORDED / DRAWN / CHECKED / APPROVED

PRESSURE SUIT VENTILATION TEST

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

Date 6-28, 1962

RUN NUMBER 56

TIME	DEW POINT °F IN	DEW POINT °F OUT	PRESS. ABS. in. Hg	SUIT TEMP °F IN	SUIT TEMP °F OUT
8:55	36	56	29.8	50	83
9:00	29.5	56	14.3	45	81
9:05	33	55	14.3	46.5	82
9:10	33	54	14.3	47.5	83
9:15	34	54.5	14.3	48	83
9:20	34.5	55	14.3	48	84
9:25	34.5	53	14.3	48	84
9:30	34.5	60	14.3	53	85
9:30			Treadmill On		
9:35	33	63.5	14.3	50	87
9:40	33.5	69.5	14.3	47	87
9:45	34	72	14.3	47	87
9:50	35	74.5	14.3	48	87
9:55	35	76.5	14.3	49	88
10:00	35.5	79	14.3	49	87
10:05	36.5	79.5	14.3	50	87
10:10	36.5	78.5	14.3	50	86
10:15	37	80	14.3	50	86
10:15			Treadmill Off		

Experiment No. 57

Test Subject Tom Dunne

Altitude 19,000 ft

Treadmill Speed 2 MPH

Suit Ventilation Rate 10

Dew Point Temperature 50°F

Suit Inlet Temperature 50°F

DATE 6-29-62

BAR 29.90 in. Hg

Time	Strip Chart #	9:25	9:30	9:35	10:30	10:35	10:40	10:45	10:50	11:00	11:05	11:10	11:15	11:20	
Water Tank (Chiller) °F	1	56	46	47	45	48	47	47	46	48	48	48	49	49	48
Saturation Tank °F	2	98	95	90	87	91	93	95	97	97	97	97	97	97	96
Heat Exchanger In °F	3	90	92	74	75	80	85	85	89	89	89	89	90	90	89
Heat Exchanger Out °F	4	67	79	50	50	50	51	50	51	50	51	51	51	52	51
Flowrater In °F	5	87	90	74	84	69	92	93	95	95	95	96	96	96	
Suit In °F	6	88	77	50	50	50	51	50	51	50	51	51	51	52	53
Dew Point, Suit In °F															
Suit Out °F	7	82	84	83	83	83	83	84	86	85	85	86	86	86	86
Dew Point, Suit Out °F															
Saturation Tank Pressure "Hg A.		19.0	16.4	16.6	16.6	16.6	16.4	16.4	16.4	16.4	16.4	16.4	16.4	16.4	24.5
Flowrate, Suit Ventilation CFM		10	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Suit/Cabin ΔP "H_2O		3.4	3.6	3.6	3.6	3.6	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0
Tank Altitude Ft		19K	19K	19K	19K	19K	19K	19K	19K	19K	19K	19K	19K	19K	7K
Tank Temp. °F		76		79	79			79			80			80	
Treadmill Start/Stop															
Suit In/Out In. H_2O		2.8	2.8	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
O_2 Consumption (L/min)															
CO_2 Production (L/min)															
Pulse Rate															
Blood Pressure															
Respiration Rate															
Body Temperature															
Comfort Level															
Remarks:															
Max H_2O Drain Out (CC)		170		200	340			500			720			895	

	Wt. Before Test	Wt. after Test	Time On Bottle
O_2 Bottle #1			
O_2 Bottle #2			
O_2 Bottle #3			

Garment Weight Before Test

After Test

ALTITUDE EQUIPMENT DIVISION		
CALCULATED		
RECORDED		
DRAWN		
CHECKED		
APPROVED		

PRESSURE SUIT VENTILATION TEST

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

SS-1018-R
Rev. 1-60

Date 6-29, 1962

BAR 29.90
OBSERVER: R. Godson

RUN NUMBER 57

TIME	DEW POINT °F IN	DEW POINT °F OUT	PRESS. ABS. In. Hg	SUIT TEMP °F IN	SUIT TEMP °F OUT
9:20	57	64	14.3	63	82
9:25	61	64.5	14.3	63	82
9:30	68	71	14.4	77	83
9:35	68.5	76	14.4	78	84
9:40	73	81	14.4	83	84
9:48	78	82	14.4	87	87
9:55	80	84	14.4	83	85
10:06	81	84	14.4	76	86
10:10	80	85	14.4	55	84
10:15	76.5	83.5	14.4	51	83
10:20	69	81	14.4	50	82
10:27	45	58.5	14.4	50	82
10:32	44	56	14.4	50	82
10:35	44	56	14.4	50	82
10:39			TREADMILL ON		
10:40	44	63.5	14.4	51	84
10:45	44.5	66.5	14.4	51	84

Date 6-29, 1962

BAR 29.90

OBSERVER: R. Godson

RUN NUMBER 57 (CONT)

TIME	DEW POINT °F IN	DEW POINT °F OUT	PRESS. ABS. In. Hg	SUIT TEMP °F IN	SUIT TEMP °F OUT
10:50	44	70.5	14.4	51	85
10:55	45	74.5	14.4	50	85
11:00	45.5	75.0	14.4	50	86
11:05	46.0	79.0	14.4	51	85
11:10	46.0	79.5	14.4	51	86
11:15	46.0	79.0	14.4	51	86
11:20	47.0	80.0	14.4	53	86
11:21			TREADMILL OFF		
11:23	46	75.0	14.4	53	86

Experiment No. 58

Test Subject Andre Kay

Altitude 19,000 Ft.

Treadmill Speed 2 MPH

Suit Ventilation Rate [illegible]

Dew Point Temperature [illegible]°F

Suit Inlet Temperature [illegible]°F

DATE 6-29-62

BAR 29.91 in. Hg

Time	Strip Chart #	2:10	2:15	2:20	2:25	2:30	2:35	2:40	2:45	2:50	2:55	3:00	3:05	3:10	3:15	3:20
Water Tank (Chiller) °F	1	38	40	39	39	39	40	40	40	42	43	44	48	44	44	46
Saturation Tank °F	2	89	99	99	99	100	100	100	98	99	98	100	100	100	107	100
Heat Exchanger In °F	3	73	82	87	90	92	92	93	93	99	99	95	95	94	96	96
Heat Exchanger Out °F	4	42	46	46	47	46	48	51	50	50	51	50	50	50	50	48
~~[illegible]~~ Flowrater In °F	5	78	96	98	98	99	100	101	102	103	103	104	103	103	105	102
Suit In °F	6	44	45	46	47	47	50	50	51	51	52	50	50	50	51	53
Dew Point, Suit In °F			36.0	37.0	38.5	40.0	42.5	43.0	44.5	45.5	46.0	44.0	43.5	43.5	44.0	44.5
Suit Out °F	7	81	82	82	82	82	83	84	84	85	83	87	86	86	88	85
Dew Point, Suit Out °F			54.0	52.5	53.0	53.5	53.0	58.5	61.5	69.5	75.0	79.5	82.0	83.5	84.5	85.0
Saturation Tank Pressure "Hg A.		18.0	16.2	16.4	16.2	16.4	16.2	16.2	18.0	18.0	18.0	18.0	17.0	18.0	17.8	17.2
Flowrate, Suit Ventilation cfm.		8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
Suit/Cabin ΔP "H_2O		1.5	2.0	2.0	2.2	1.0	2.8	2.2	1.8	2.0	1.5	1.5	1.8	1.5	1.5	1.8
Tank Altitude Ft.		17K	19K	19K	19K	19K	19K	19K	19K	19K	19K	19K	19K	19K	19K	19K
Cabin Air Temp. °F		76°		79°				80°			81°			82°		
Treadmill Start/Stop								Start	Moving	Moving	Moving	Moving	Moving	Moving	Moving	Stop
Suit In/Out ΔP "H_2O"		0.5	1.8	1.0	1.0	0.8	0.5	1.2	1.2	1.5	1.2	1.5	1.5	1.5		1.2
O_2 Consumption (L/min)																
CO_2 Production (L/min)																
Pulse Rate																
Blood Pressure																
Respiration Rate																
Body Temperature																
Comfort Level																
Remarks:																
H_2O From Heat Exchanger		90 c.c.		97 c.c.				108 c.c.			165 c.c.			170 c.c.		

	Wt. before Test	Wt. after Test	Time On Bottle	Garment Weight
O_2 Bottle #1				Before Test
Bottle #2				
O_2 Bottle #3				After Test

ALTITUDE EQUIPMENT DIVISION		
CALCULATED		
RECORDED		
DRAWN		
CHECKED		
APPROVED		

PRESSURE SUIT VENTILATION [illegible]

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

Experiment No. 58
Test Subject Andre Kay
Altitude 19 K Ft
Treadmill Speed 2 MPH (45 Min.)

Suit Ventilation Rate [illegible]
Dew Point Temperature 50°F
Suit Inlet Temperature 50°F

DATE 6-29-62
BAR 29.91 in. Hg

Time		Strip Chart #	1135
Water Tank (Chiller)	°F	1	47
Saturation Tank	°F	2	111
Heat Exchanger In	°F	3	110
Heat Exchanger Out	°F	4	49
Flowrater In	°F	5	123
Suit In	°F	6	51
Dew Point, Suit In			
Suit Out	°F	7	85
Dew Point, Suit Out			
Saturation Tank Pressure "Hg A			
Flowrate, Suit Ventilation			
Suit/Cabin ΔP "H_2O			
Cabin Altitude			
Cabin Air Temp. °F			80°
Treadmill Start/Stop			
Suit In/Out ΔP H_2O			0.50
O_2 Consumption (L/min)			
CO_2 Production (L/min)			
Pulse Rate			
Blood Pressure			
Respiration Rate			
Body Temperature			
Comfort Level			
Remarks:			
H_2O From Heat Exchanger			1010

	Wt. Before Test	Wt. after Test	Time On Bottle	Garment Weight
O_2 Bottle #1				Before Test
Bottle #2				
O_2 Bottle #3				After Test

ALTITUDE EQUIPMENT DIVISION		
CALCULATED		
RECORDED		
DRAWN		
CHECKED		
APPROVED		

PRESSURE SUIT VENTILATION TEST

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA

SS-1018-R

Date 6-29, 1962

BAR 29.91

RUN NUMBER 58

TIME	DEW POINT °F IN	DEW POINT °F OUT	PRESS. ABS. In. Hg	SUIT TEMP °F IN	SUIT TEMP °F OUT
2:12	34.5	56	14.4	43	81
2:15	36	54	14.3	44	82.5
2:20	37	52.5	14.3	46	82
2:25	38.5	53	14.3	46	82
2:30	40	53.5	14.3	47	82
2:35	42.5	53	14.3	50	83
2:45	43	58.5	14.3	50	84
2:41			TREADMILL ON		
2:45	44.5	61.5	14.3	50	84
2:50	45.5	69.5	14.3	51	85
2:55	46	75	14.3	52 *	85
2:57		SHIFT IN BROWN CHART PAPER CORRECTED			
3:00	44	79.5		53	87
3:05	43.5	82	14.3	49	86
3:10	43.5	83.5	14.3	50	87
3:15	44	84.5	14.2	51	89
3:20	44.5	85	14.2	51	87

3:20 TREADMILL OFF

*SUIT IN READ 52. AFTER CORRECTION OF PAPER SHIFT READ 55

Experiment No. [illegible]

Test Subject [illegible]

Altitude Sea Level

Treadmill Speed [illegible]

DATE 6-29-62

BAR 29.91 in. Hg

Time		Strip Chart [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Water Tank (Chiller)	°F	7	[illegible]				
Saturation Tank	°F	2	107				
Heat Exchanger In	°F	3	[illegible]				
Heat Exchanger Out	°F	4	51				
~~Reheater Out~~ Flowrater In	°F	5	91				
Suit In	°F	6	53				
Dew Point, Suit In							
Suit Out	°F	7	[illegible]				
Dew Point, Suit Out							
Saturation Tank Pressure "Hg A.							
Flowrate, Suit Ventilation							
Suit/Cabin ΔP "H_2O							
Tank Altitude							
Cabin Air Temp. °F							
Treadmill Start/Stop							
Suit In/out ΔP "H_2O"			4	4.5	[illegible]	[illegible]	[illegible]
O_2 Consumption (L/min)							
CO_2 Production (L/min)							
Pulse Rate							
Blood Pressure							
Respiration Rate							
Body Temperature							
Comfort Level							

Remarks:

H_2O From Heat Exchanger

SHORT RUN TO DETERMINE ΔP AT HIGH VENTILATION.

	Wt. Before Test	Wt. after Test	Time On Bottle	Garment Weight
O_2 Bottle #1				Before Test
O_2 Bottle #2				
O_2 Bottle #3				After Test

ALTITUDE EQUIPMENT DIVISION		
CALCULATED		
RECORDED		
DRAWN		
CHECKED		
APPROVED		

PRESSURE SUIT VENTILATION TEST

AIRESEARCH MANUFACTURING CO.
LOS ANGELES CALIFORNIA