Aeromedical Support to Multi-Record Winning Wingsuit Attempt

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QinetiQ

Mr Fraser Corsan Wingsuit Flyer Fujitsu

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What is a Wingsuit?

- Fabric between Arms & Legs
- Creates a Surface Area & Acts Like Aerofoil
- Shallow Glide Angle & High Speed
- Parachute For Landing
- Fraser's 'State of the Art'
- Advanced Composite Components

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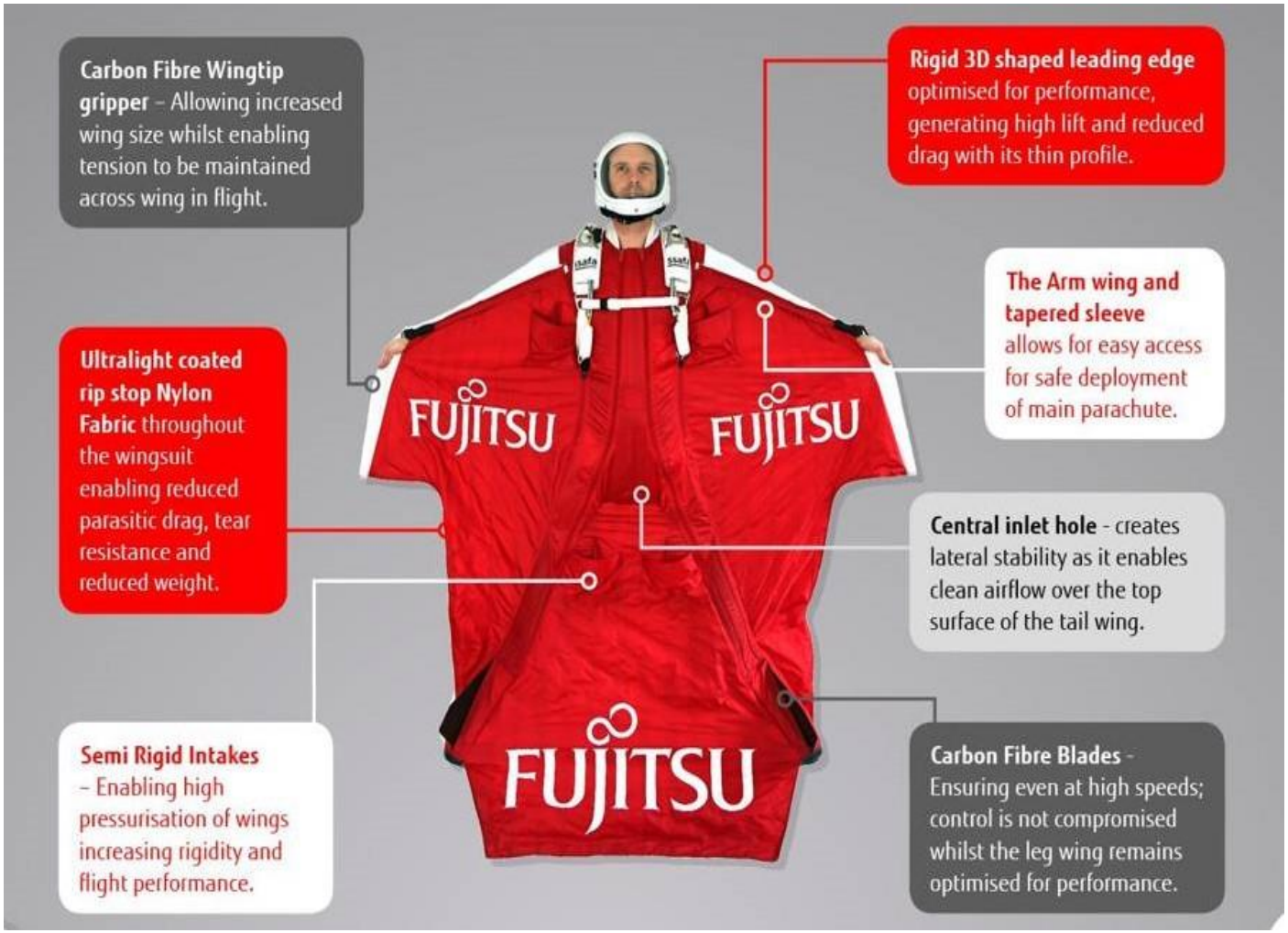
Fraser's Record Breaking Wingsuit



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What's Wingsuit Flying Like?

Iron Man?

Superman?

No,…… Fraser!

You will believe a man can fly!

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The Record Attempts

Highest Altitude Jumped

Highest Speed Achieved

Longest Time Flown

Furthest Distance Flown

PROJECT CIRRUS

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Aircraft, Balloon & Altitudes

Aircraft 38,000 Feet

Balloon 42,000 Feet

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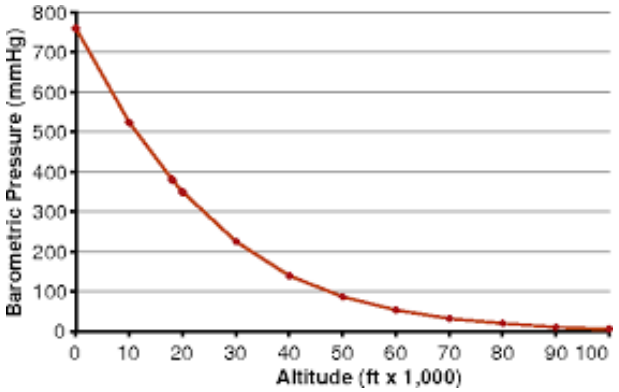
Hypoxia

At 42,000 ft lack of Oxygen

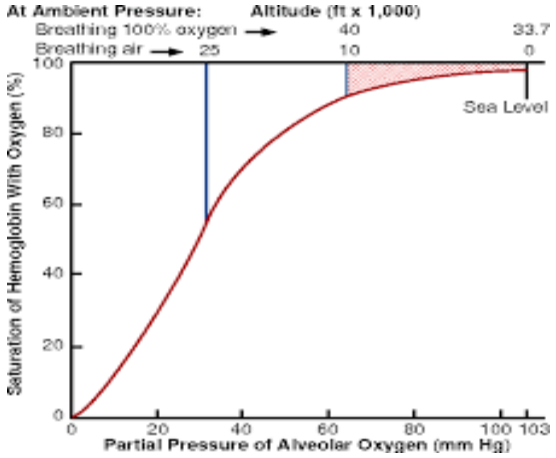
= Loss of Consciousness in 12s

Even 100% Oxygen Inadequate to Support Exercise

Pressure Breathing System Required



Altitude	Time of Useful Consciousness
45,000 feet MSL	9 to 15 seconds
40,000 feet MSL	15 to 20 seconds
35,000 feet MSL	30 to 60 seconds
30,000 feet MSL	1 to 2 minutes
28,000 feet MSL	2½ to 3 minutes
25,000 feet MSL	3 to 5 minutes
22,000 feet MSL	5 to 10 minutes
20,000 feet MSL	30 minutes or more



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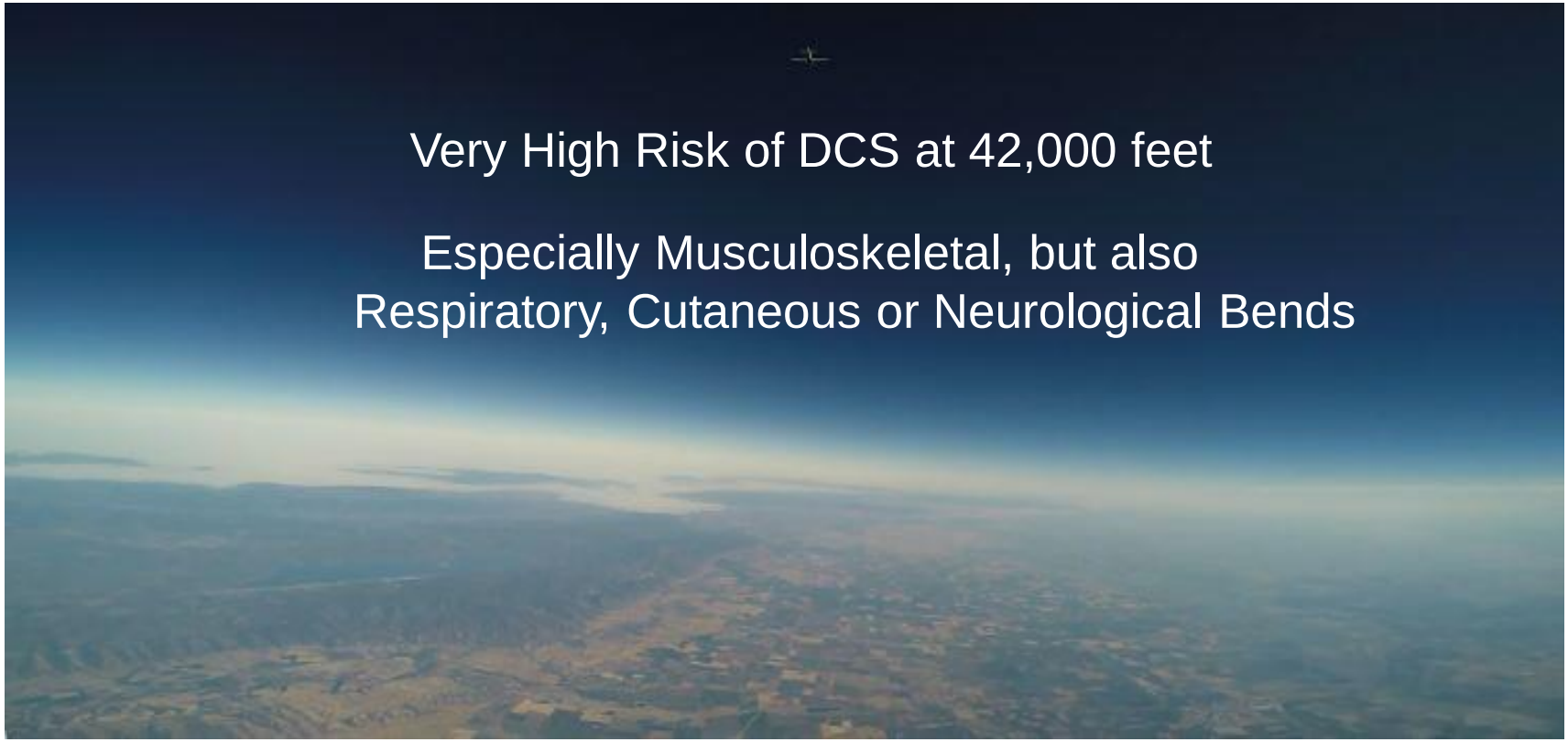
Decompression Sickness



Use of a 100% Oxygen System with Long Pre-Breathe Mandated

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Cold Effects on Man & Equipment

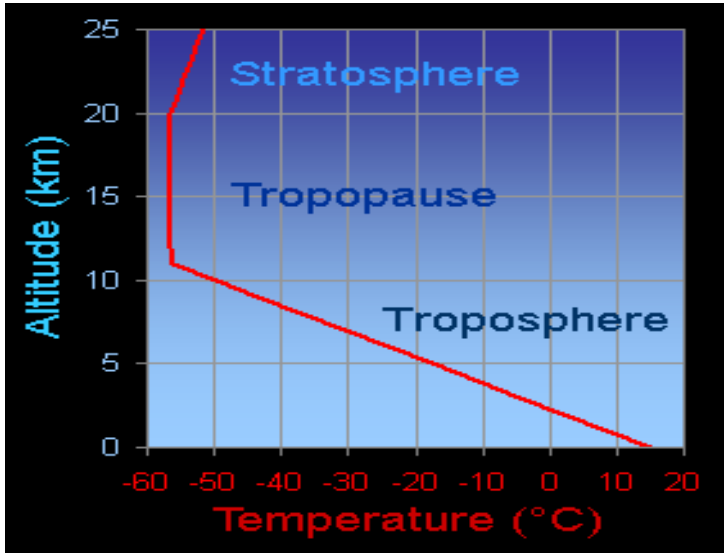
42,000 feet is in the Tropopause

Average temperature is -56C (-69F)

With Windchill at 200mph+

Equivalent to ~-95C (-139F)

Extreme Cold Protection Required



		Air Temperature (Celsius)																
		0	-1	-2	-3	-4	-5	-10	-15	-20	-25	-30	-35	-40	-45	-50	-55	-60
Wind Speed (km/hr)	6	-2	-3	-4	-5	-7	-8	-14	-19	-25	-31	-37	-42	-48	-54	-60	-65	-71
	8	-3	-4	-5	-6	-7	-9	-14	-20	-26	-32	-38	-44	-50	-56	-61	-67	-73
	10	-3	-5	-6	-7	-8	-9	-15	-21	-27	-33	-39	-45	-51	-57	-63	-69	-75
	15	-4	-6	-7	-8	-9	-11	-17	-23	-29	-35	-41	-48	-54	-60	-66	-72	-78
	20	-5	-7	-8	-9	-10	-12	-18	-24	-30	-37	-43	-49	-56	-62	-68	-75	-81
	25	-6	-7	-8	-10	-11	-12	-19	-25	-32	-38	-44	-51	-57	-64	-70	-77	-83
	30	-6	-8	-9	-10	-12	-13	-20	-26	-33	-39	-46	-52	-59	-65	-72	-78	-85
	35	-7	-8	-10	-11	-12	-14	-20	-27	-33	-40	-47	-53	-60	-66	-73	-80	-86
	40	-7	-9	-10	-11	-13	-14	-21	-27	-34	-41	-48	-54	-61	-68	-74	-81	-88
	45	-8	-9	-10	-12	-13	-15	-21	-28	-35	-42	-48	-55	-62	-69	-75	-82	-89
	50	-8	-10	-11	-12	-14	-15	-22	-29	-35	-42	-49	-56	-63	-69	-76	-83	-90
	55	-8	-10	-11	-13	-14	-15	-22	-29	-36	-43	-50	-57	-63	-70	-77	-84	-91
	60	-9	-10	-12	-13	-14	-16	-23	-30	-36	-43	-50	-57	-64	-71	-78	-85	-92
	65	-9	-10	-12	-13	-15	-16	-23	-30	-37	-44	-51	-58	-65	-72	-79	-86	-93
	70	-9	-11	-12	-14	-15	-16	-23	-30	-37	-44	-51	-58	-65	-72	-80	-87	-94
	75	-10	-11	-12	-14	-15	-17	-24	-31	-38	-45	-52	-59	-66	-73	-80	-87	-94
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	85	-10	-11	-13	-14	-16	-17	-24	-31	-39	-46	-53	-60	-67	-74	-81	-89	-96
	90	-10	-12	-13	-15	-16	-17	-25	-32	-39	-46	-53	-61	-68	-75	-82	-89	-96
	95	-10	-12	-13	-15	-16	-18	-25	-32	-39	-47	-54	-61	-68	-75	-83	-90	-97
	100	-11	-12	-14	-15	-16	-18	-25	-32	-40	-47	-54	-61	-69	-76	-83	-90	-98
	105	-11	-12	-14	-15	-17	-18	-25	-33	-40	-47	-55	-62	-69	-76	-84	-91	-98
	110	-11	-12	-14	-15	-17	-18	-26	-33	-40	-48	-55	-62	-70	-77	-84	-91	-99
		0 to -10 Low			-10 to -25 Moderate			-25 to - 45 Cold			-45 to -59 Extreme			-60 Plus very Extreme				

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Equipment: Oxygen Regulator

Cobham CRU 103 Regulator

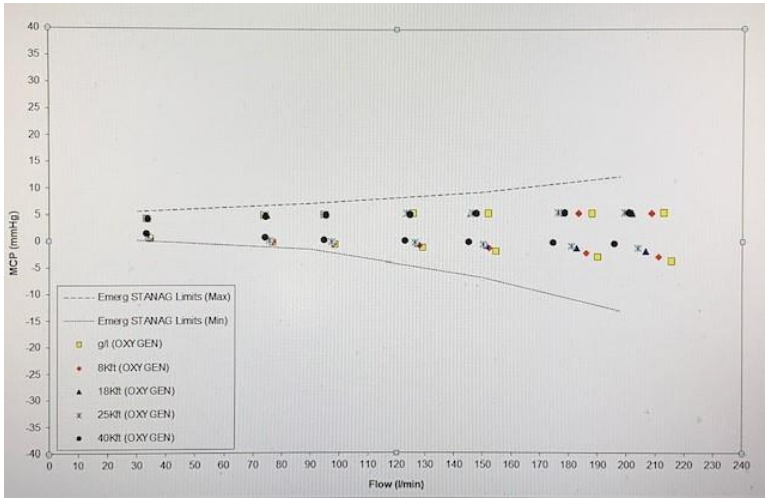
100% Oxygen Only: (Hypoxia & DCS)

Pressure Breathing Enabled (40kft+)

Dynamic Testing showed

Excellent Breathing Performance

Man Mounted, heated & insulated



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Head Equipment Assembly

Modified Phantom Oxygen Mask

(Gentex MBU Derivative)

Integrated within Helmet Visor Assembly

(Impact & Cold Protection)

Expiratory Gases Ported Out

(Reduce Icing of Expirate)

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Oxygen Cylinder and Console

Oxygen Cylinder (Cobham)

Carbon Fibre Full Composite (CFFC)

3000psig, 410 litres O2 (NTP)

Oxygen Console (Cobham Phantom)

3000psig, 3,600 litres O2 (NTP)

STANAG 7056 Certified for Prebreathing

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Cold Protection for Man & Equipment

Insulated Wingsuit & Thermal Skinsuit

Electric hand warmers (Li ion)

Chemical Heating Pads (for hands & regulator)

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Teaching, Hypoxia & Pressure Breathing Training

Teaching: Altitude, Hypoxia, DCS Cold Implications, Prevention & Management

Personal experience of Hypoxia

Pressure Breathing Training

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A Competitive Edge? Altitude Acclimatization

Live at Altitude for Several Days

Reduced Oxygen Breathing Device

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The Jump & Record Attempt

Bad 

Weather!

Jump 1 From Aircraft

Aircraft Altitude Restricted by Heat

Jump 2 from Balloon

Attempt Cancelled due to Wind & Rain

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The Jump & Record Attempt

However, this is how it went

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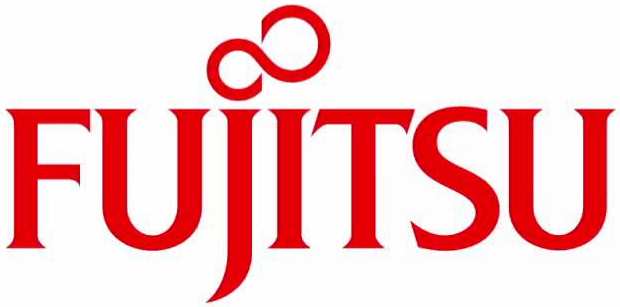

shaping tomorrow with you

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The Jump & Record Attempt: Result

Despite Only having One Attempt **Fraser Broke the Following 4 Records**:

1. World Record for Fastest Peak Speed (246.6mph, 396.88kph)
2. FAI Continental Altitude Record (10,824m, 35,509ft)
3. FAI British Altitude Record (10,824m, 35,509ft)
4. FAI European Record Furthest Distance of Fall (9,741m, 31,959ft)

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The Jump & Record Attempt: Conclusions

All of the following worked very well:

Wingsuit

Oxygen System

Thermal Protective Systems

Pre Attempt Preparation & Training

Had Weather been better More

Records would have Probably Fallen

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Questions?

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