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INFLATABLE INNOVATION –DEVELOPING AN INFLATABLE SEA KAYAK

A thesis presented in fulfilment of the requirements for the degree of Masters In Manufacturing and Industrial Technology at Massey University, Turitea, Palmerston North, New Zealand.

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ABSTRACT

There are many kayaks available and many of these are sea kayaks or inflatable kayaks. During an investigation by this researcher (referred to throughout this document in the first person), of the current sea kayaking market, a gap was identified for a sea kayak that was lightweight, portable and capable of touring and expeditions. An inflatable kayak often offers the initial two features of being lightweight and portable. The additional features of being capable of touring and expeditions, however, were the area of concentration.

The problem was approached through a combination of expertise, facilities and finance provided by an inflatable boat manufacturer, Incept Marine Ltd (Incept), an experienced sea kayaker (Audrey Sutherland), and a fellow (this researcher), supported by a Graduate in Industry Foundation (GRIF) scholarship, payable over 12 months.

The objectives of the project were to produce an inflatable sea kayak capable of carrying the equipment required for expeditions, be reliable, and have features that were found in most hardshell sea kayaks. Features for development included room for storage, a deck and a rudder to ease steering. In addition the inflatable sea kayak needed to perform better than most inflatables that were on the market, as they were often slow due to a lack in strength and rigidity. Stability was important and just as a whitewater kayak should be able to negotiate its way through rapids on a river, a sea kayak should be able to guide itself over waves and cover the distances it was expected to travel, while keeping the paddler safe.

The detail required in the pattern and processes could only be known by those with experience in the industry who had learnt to foresee potential problems. There was little room for error, right from the pattern design to the small but often essential processes that made Incept boats recognised around the world for their quality. It was the small and sometimes obvious areas that caused problems; for example, having to trust other manufacturers' specifications, which could lead to glues becoming

susceptible to humidity and heat after a prolonged time, or the need for pressure release valves in order to fix I-beams.

The final prototype was a synergy of ideas and experience brought together to form an inflatable kayak that had characteristics to fit a consumer market wanting a kayak for paddling in exposed and open water environments . The direction and input from an experienced sea kayaker moved the project to an area that could not have been reached without considerably more market research.

Working in a small innovative business created its own set of difficulties to be overcome in such a project. However, it also allowed involvement from everyone in the company to input into the outcome of the project.

The project ended successfully with two working prototypes known as the Incept inflatable sea kayak K40 (K40).

To attain serious speeds with limited power, it is more efficient to travel completely underwater, or in the air above it. As land creatures, we are unable to successfully do either in a self propelled and sustainable manner, so we are stuck on the surface.

(Dickson, 1996, p.42).

ACKNOWLEDGEMENTS

With ongoing flitting backward and forward between Taihape and Palmerston North for almost 11 months during 2000, the project was finally drawn to a close. Some would say; better late than never... it certainly took a long time, and I am sure some people thought I would never make it.

With thanks to Foundation for Research Science and Technology, a GRIF scholarship set the project in motion, we set out to develop an inflatable sea kayak in conjunction with the team at Incept Marine Ltd in Taihape. At the end of 12 months we definitely had made progress in looking at the market and coming up with a working prototype. By the end of the project we sent one of the final prototypes over to our "target market," Audrey Sutherland, who provided information and feedback throughout the project as well as her own evaluation of the project. All of who made the project possible.

It wasn't too hard to keep on track until a full time job came along, and progress slowed remarkably. That has to be where I begin; not only would I like to thank Harvey Barraclough and Ralph Ball for their help but also their seemingly gracious patience with the time that it has taken to submit this thesis. Harvey and Ralph have had the onerous task of being my project supervisors. During the time I spent in Taihape through till now they have been on call to hear about my difficulties, successes, provide advice and slowly encourage progress on the imminent thesis. Thank you for your patience.

I would like to acknowledge Rodney Adank, my Product Development lecturer and tutor through my undergraduate degree in Product Development who initially convinced me of the opportunity to do a Masterate. Even though he moved on to Wellington during the project, he definitely encouraged me in the early stages of the project while he was at the Turitea Campus.

Many things have changed in my life since the beginning of this project, including changing my name along with gaining a husband. His own temptation overcame him

as initially he promised not to propose until I had finished... we got married in January 2002. His pleasure in hearing that I no longer “have to work on my thesis this weekend” will be immense.

And my parents; thanks Mum for always encouraging me no matter what, and Dad for making sure that I follow through with the things that I start. You have been very supportive of me, given me great advice (although I am sure you thought it sometimes went in one ear and out the other) and never given up on me.

“Perseverance must finish its work so that you may be mature and complete, not lacking anything.” James 1:4 NIV

Whaia e koe ki te iti kahurangi; ki te tuohu koe, me maunga teitei

Seek the treasure you value most dearly: if you bow your head, let it be to a lofty mountain. (www.maori.org.nz/quote.htm, 2003)

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