competitionchat

Water Rat – record-breaking Imp-engined hydroplane David Polden, Cornwall

I started inboard R1 hydroplane racing in 1978, joining the Midland Hydroplane Club near Sutton Coldfield. For some time I had been attracted to racing hydros as they were the fastest boat form, the weight being supported by planing forces and propeller lift. I bought a new Marauder hull, fitting it out with an inboard Imp engine and opted to race R1 – 1-litre full-race engine, there also being an 875cc stock engine class. The boat was named *Water Rat*.

Andy Chesman of Greetham Engineering, a leading engine supplier and also an R1 competitor, was indeed a formidable adversary. However, he was always ready to offer advice and assistance both away from and at race meetings. A 998cc competition engine was purchased, rebuilt, upgraded and modified for use in the boat using a combined inlet and exhaust manifold with a 4 into 2 into 1 exhaust for optimum torque and a pair of side-draught 40 DHLA Dellorto carburettors (giving better fuel atomisation than Webers) running on then available high-octane 5 star pump fuel fed to the engine by a Facet fuel pump.

The two-blade 9" diameter right-hand propeller gives thrust and lift and spins at engine rpm, driving off the nose of the crank. Circuits are anti-clockwise, props being changed to suit the race circuit and water conditions, pitches for racing from 11" to 12.5", the best being forged steel Italian props by Radice. (*Pitch on a propeller, whether aero or marine, is the theoretical distance travelled in one revolution of the propeller. Obviously factors such as drag means the actual distance is somewhat less. GP*)

As many parts and fittings are one-offs, fitting out the boat was quite a challenge, the assistance of Oxford Research Systems was invaluable.

My first event after joining the Midland Hydroplane Club was the Piranha trophy in 1980 but I had to retire with steering geometry issues.

Each race circuit had its own challenges; both the racing and the social aspect were something to look forward to. I competed in club and national races in the 1980-1982 seasons having some good results, the best being 2nd in a National at Holme Pierrepont, the National Watersports Centre, which I later used for my high-speed testing.



Hull design was evolving and the next generation of 'pickleforks' were appearing in 1981 so we decided to re-engineer the boat to make an attempt on the S1 (Sportsboat) World Water Speed record. The R1 category was being dominated by the factory engined outfits of Andy Ches-



man and Len Moore (Andy also running a stretched Imp engine in the R2 1500 cc class.) In October every year Windermere Water Speed Record Club had the use of North Lake for one week, timing being set-up to enable two-way flying kilometre record attempts to be ratified by the UIM (Union Internationale Motonautique, the international governing body of powerboating).

Ron Wolbold of Blufin Engineering, the hull builder, lengthened the hull by 18". A complete refit



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at 114 mph – luckily only sustaining bruising. However, he had already set a new National R2 (1.5-litre) record of 109.8 mph.

During 1983 a new 4 into 1 manifold with 2.75" primaries was made by Len Hartley Developments (who made the Cosworth test sets), his brief being to build a set for



with Andy in Coventry!

was undertaken. S1 rules required reverse gear

- Bucks Gears developed a unit using parts from a DAF44 transaxle. The engine was developed

further within homologation limits with

significant assistance and burning midnight oil

The delays resulted in no opportunity for

testing which led to difficulty in getting the boat

onto the plane at the 1982 Record Week. Major alterations had to be made overnight to the

planing shoes. A run of 77.08 mph showed

potential but on the next run a gearbox bearing

seized. On the last run of the week Andy hit

some wash on the run into the kilometre flipping



maximum power. A compromised torque curve at low rpm caused problems later on! Breathing was improved by using a pair of 45 DHLA carburettors using the maximum allowable 10% methanol, consuming approximately 1.5 gallons for one attempt of around 10 km. Lucas developed an electronic ignition pack and a major gearbox redesign to ensure sufficient top bearing lubrication was carried out.

Very poor weather conditions during 1983 Record Week left little flat water for fast-planing boats but on Thursday 13th October I got one good run setting a



New World S1 Record of 92.99 mph using a 13" pitch prop – the previous record was 82.17 mph. Having run the boat through the traps several times it was now possible to work out the hull efficiency (87.9%). Knowing the engine rpm from a cam-driven Smiths mechanical tacho, speed could now be accurately calculated which was a great benefit in testing.

1984 saw further developments in the quest for more speed. Driving position was converted to semi-prone on my back, reducing wind resistance behind one of Mike Hailwood's spare bike screens (not much of a view). The Dagger board (Skeg) was removed to reduce drag but having the downside of making the boat very skittish; the rudder was also shortened to reduce drag (engine water pick-up on bottom of rudder!).





Above: Windermere one-kilometre course Main photo: 1984 World Record run Photo supplied by David Polden

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Significant progress was made during dawn test days at Holme Pierrepont. Conditions at Windermere were excellent but the water was too 'sticky' for me to get the large pitch 13½" prop 'up'. On the 15th October using the 13" prop, I made a run of 99.445 mph, max rpm 9200 breaking the existing record.

Two days later with the water like a mill pond on the run South into the timed Km I tried to make a slight course correction but there was no steering effect. The rudder was out of the water but still supplying just enough cooling to keep the engine temperature within limits; I kept my foot in and let it run achieving a speed of 101.54 mph. However, the boat fell off the plane while turning for the return run and I failed to get it on to the plane again, having to be towed back to the pits. As a consequence I ran out of time to make the return run within the designated hour.

Work commitments caused me to miss 1985 and '86 but we returned in 1987, the engine top end being further developed including a Greetham Engineering GE3 cam. Despite several 100 mph plus runs we narrowly failed to beat the record by the required three quarter percent.

Returning in 1988 and successfully running the $13\frac{1}{2}$ " prop on the practice course at Windermere we waited for optimum weather conditions. On Friday 21st October *Water Rat* ran for the last time – the propshaft breaking behind the P bracket and the $13\frac{1}{2}$ " prop was lost.

The record stands in perpetuity as the UIM from 1989 required driver safety cells in many classes which made boats obsolete, a line being drawn under existing records.

Postscript. After moving to 500cc outboard racing, Andy Chesman died competing in Hamburg on 19th July 1998, a week after becoming 500 cc World Champion, aged 52. Missed by all.

I wish to dedicate this article to the many people who gave me enthusiastic help and my supporters, large and small, who enabled me to turn my dream into reality.

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