Vol. 5 Spring 2005

PARTS SPECIAL

MER EQUIPMENT

The MERmade Mechanic

MARINE ENGINE & REPAIR *quarterly*

news you can use:

JD twin-disc Repower—Biodiesel—Pressurized Cooling—Coolants ... *& Ivan Fox*

Prime Movers

ENGINES—Doing the TANGO

64' with a 17.4 beam, *Tango* draws 5' and rides well with her 4-fin stabilizer system. The new 267-HP pair of MER-made John Deere 6068 SFM electronic engines reduced cruise fuel consumption while increasing speed & cruise range.

Doug Klappenbach says when he and his wife, Stephanie, leave the city behind and take off for blue water in their twin-screw 64-ft. yacht, *Tango*, they say "It's *Tango* time." And when they wanted to get from here to there faster, they looked to repower with a pair of Deeres.

Second owners to what was first called *Northstar*, the couple gutted and refurbished the entire interior to their own design. And they know good design, as partners in their Bellevue real estate and development business, Sound Ventures, Inc. Over the years the Klappenbach's chartered a series of boats to determine just what they wanted to buy, then bought and cherried-out the *Tango*. Last spring they gave her more power with a new set of MER John Deere 6068 SFMs.

Sailing around Southeast Alaska summer of '03 Doug says they found the coastal cruiser underpowered with its original pair of 174-HP 668T Luggers. Designed and built in '99 with a 1400-gal. fuel capacity, he says the Defever Grand Alaskan could get 7½ knots running at 50% load.

"What we cruised at most times was 8½ knots," he says. "And that summer with those engines we averaged about 9 gal. per engine hour, but we were also running the generators. We spent four months in Alaska, put 850 hours in on the engines.

"When we had current on the nose, or trying to get from one passage at slack to another passage at slack, we couldn't always make it at 8 knots."

Although recalling no definitive We-Need-More-Power moment, Doug does recount the time they had perfect weather to cross Queen Charlotte Sound but wouldn't get to the anchorage til about 9 p.m. Not wanting to navigate the small harbor at night they put in at Port Hardy instead. "Weather came up," he says, "we laid in harbor for four days.

"That time two more knots over an 8-hour period of time would've saved us four days."

Also having problems with overheating and looking at $3,000 to $6,000 to overhaul the cooling system, "At that kind of money," Doug says, "we decided to put in the new engines."

Because Lugger uses the same block as John Deere he went shopping for Deeres. "We didn't have to change motor mounts, shaft, or gearboxes," which he says are almost as expensive as the engines. "Only thing I had to change were the props and the raw-water intake"—discovered as the most likely cause of the overheating problem.

Doug chose MER to do the *Tango*: "Found MER at the boat show," he says. "I'd been looking at John Deeres—they made an engine with more horsepower with the same block." Knowing MER's the JD rep, Doug stopped at the booth to talk to Bob Allen.

"Bob was really sharp," Doug says. "He knew what he was talking about."

MER completely customized the engines for Ocean Alexander's installation through removable panels in the salon using a junior I-beam, block and tackle *(details bottom left)*.

After logging the first 39 hours on the new set of engines Doug reported a faster boat at about the same rate of fuel consumption with more horsepower and better efficiency. They go 20% farther in that hour with an added 2 knots.

"At 2000 rpm—55% of engine power—we get 10.5 knots," says Doug. "So it was a good, solid 2-knot increase. It's exactly what we calculated would happen, using the naval architectural calculations for horsepower, prop size, pitch, hull speed."

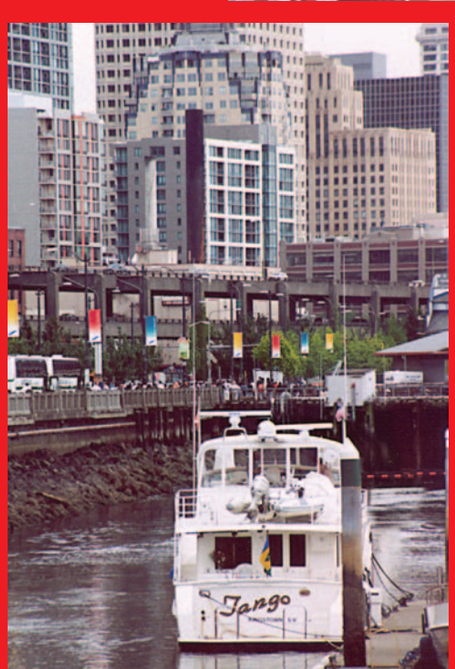
Using twin diesels doesn't just give you more power—Doug also likes the slow-speed maneuverability. He says one engine in forward and the other in reverse works even better than bow thrusters, and you can turn on a dime.

Speculating the range is approximately 1000 miles cruising at 10½ knots, Doug says that "I'm sure if we slowed down to hull speed we'd have more than twice that."

Does *Tango* carry a spare parts kit? You bet. "Mark gave me a recommended list," he says. So you can bet when it's time to *Tango*, they'll be ready to dance.

MER-made Deeres to Tango

After final adjustments following sea trials, Doug Klappenbach *(right, and inset)* gets ready for *Tango* Time, May 2004, moored at Seattle's Pier 66.



Bob and the MER crew made all component fabrications, set the engines up for single side-service, then installed extra alternators and front-end PTOs for auxiliary hydraulics. Building new gear oil-coolers—which also keep compressors cooled for the stabilizer system—they simplified the plumbing and electrical systems a bit and installed trolling valves on the Twin Disc Gears.

Ocean Alexander Marine Service Center removed the old engines and installed the new. After Scott Morris and John Brooks completed the John Deere alignment MER returned to dial-in the PTOs and the new digital engine instruments on sea trial.

Running light: ✸ Intelligent people have more zinc and copper in their hair. *(Almost makes you want to bottom paint. Almost.)* ✸ What's the most popular name owners request for their boats? *(answer below)*

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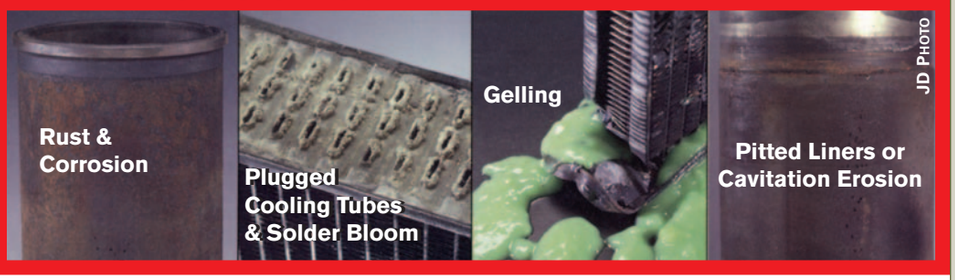
Do the math–a little more money up front will save a lot more money over time.

Lower-grade or automotive-type antifreeze will come back to haunt your engine. Pay a little more for quality coolant now, or you can pay later, with ...

The Fab Four! Coolant Gone Bad



The Biodiesel Bandwagon Reined In

Last issue we endorsed biodiesel as the **fuel additive** of choice. It still is. There is a downside, but not a dealbreaker. The good news is, biodiesel biodegrades in the environment. The bad news is, biodiesel biodegrades ... on the shelf too. As organic products do.

So if you're tempted to pack some biodiesel barrels aboard to transform your low-sulfur diesel into a superior fuel–don't let it sit too long. Many petroleum companies do not recommend storing petro diesel for more than 6 months either. Likewise, industry recommendations suggest using biodiesel within 6 months, or have it reanalyzed (good luck on that).

Areas of concern in storage and handling of biodiesel include: quality of new fuel; water content; and aging. Problems in these areas WHEN USING BIODIESEL IN CONCENTRATIONS ABOVE 5% may lead to the following symptoms:

- Power loss, deteriorating performance
- Fuel leaks
- Fuel injection equipment corroding
- Coked/blocked injector nozzles, resulting in engine misfire
- Filter plugging
- Lacquering/seizure of internal components
- Sludge & sediments
- Reduced service life of engine components

Also just like #2 diesel, biodiesel will gel in very cold temperatures too. FYI: *Pure* biodiesel has a higher cloud point than #2 diesel fuel (gelling sooner with decreasing temperature), while blends of 20% biodiesel use the same fuel management techniques as #2 diesel, and biodiesel blends of 5%-or-less have virtually no impact on cold flow.

At this time, with biodiesel development and engine compatibility evolving, it seems prudent to **caution against using a biodiesel blend greater than 5%**!

Raw pressed vegetable oils in any concentration are NOT acceptable for use as fuel in John Deere engines–they do not burn completely, & will cause engine failure by leaving deposits on injectors & in the combustion chamber. Check with MER or your local fuel distributor for the JD-approved biodiesel specs, & for additives to improve their storage & performance.

Too Much of a Good Thing?

Yes, it's true, even despite all the great things about biodiesel fuel: performance, superior lubricity, nontoxicity, higher cetane, burns clean enough for the Clean Air Act, operates in any diesel engine with little or no modification, does not void parts-and-materials workmanship warranties in existing diesel engines of any engine manufacturer ... we could go on & on.

But problems can arise in fuel blends greater than 5% biodiesel–cold-temperature gelling *(below left)* plus rumors of plugged filters, degraded gaskets & seals.

Pure biodiesel has a solvent effect, so actually any plugging going on with a high-percent blend is likely from releasing deposits on tank walls and pipes accumulated from that OTHER diesel fuel you were using. If your biodiesel blends are high, released deposits could clog filters initially, so guard against that by replacing fuel filters until eliminating the petroleum buildup.

About those seals and gaskets. In general, biodiesel used in PURE FORM can over time soften and degrade certain types of rubber and elastic rubberlike compounds (elastomers). High-percent biodiesel blends can impact fuel system components (primarily hoses and pump seals) that contain elastomer compounds incompatible with biodiesel–although effects lessen with decreasing blend levels.

Since the recent switch to low-sulfur diesel fuel, most Original Equipment Manufacturers (OEMs) have switched to components suitable for use with biodiesel. Sometimes it takes awhile to get new bandwagons rolling, but as they do, more and more people, boats, engines, and suppliers will jump on.

Or, sure, you can improve fuel lubricity with just a regular, standard additive such as JD PREMIUM DIESEL FUEL CONDITIONER or equivalent, til the evolution takes hold. And when nothing else is available, word on the dock is some guys have been throwing in a quart of ATF per 100 gallons of fuel.

MER EQUIPMENT

Discount Coupon

20% OFF your next MER Parts & Accessories purchase—before April 30, 2005

The fine print:

- **Based on standard MER list prices.**
- **Not valid with other discounts or specials.**
- **One per customer.**
- **Expires 4.30.05**
- **Bring in coupon or call today to apply to your order.**

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MER's Maids & Men

Meet the MER Crew—Bob Allen, Prez., in his own words ...

It was 1969, three days after my high-school graduation when I got on the plane to Kodiak. I didn't know what a "Beach Gang" was, but I was going to be on one in Uganik Bay. It wasn't on the map. I had to guess how to pronounce it. The lady at Kodiak Air just smiled when I tried to say Uganik for the first time out loud. Growing up on a farm in Eastern Washington, I had never been on a seaplane—only Goose or Widgeon I knew had feathers.

One time or another, over the next three summers I had the opportunity to do just about every job in the cannery. I unloaded salmon from the tenders, sorted fish, pulled eggs, worked the slime line, the patching table, loaded & unloaded retorts, & worked the casing machine with Bennie, a chain-smoking Filipino who never stopped smiling. We loaded thousands of pallets of salmon in the warehouse and emptied it when SeaLand showed up with the barge.

I worked for Boyd "Buck" Roberts those years—he was a legend in his own time. Buck could build a cannery in the wilderness with his bare hands, move mountains with a fire hose. He liked me, I guess—taught me how to drive a boat, run the pile driver, showed me what a peavee was. If anything was broke the Beach Gang got to fix it, & believe me, something was always broke.

I guess that's where I got my passion for fixing things. I learned that you didn't really need the parts or the tools. If it was broke you were going to fix it with what you had on hand—if we had to build the tool and forge the part, it was gonna be working again and we weren't going to sleep til it was. I got my nickname "Cap'n Spucky" cause I always found a way to fix things. Might not have been pretty, but that wasn't the point.

I fell in love with the boss's daughter during that time in Uganik. He was Ivan Fox, and eventually he put me on a tender to keep us from getting too "cozy." I ran several different tenders buying fish for the cannery. Christy and I finished college but we didn't want to stop going to Kodiak, so we got married, bought a setnet site in Uganik. We've raised our two kids there, been going back every summer—enjoyed the pain so much we eventually bought another one on the Shelikof. We've seen the rise and fall of salmon prices firsthand.

PHOTO BY CHRISTY ALLEN

It was 1980 when Ivan told me Marine Engine Repair Co. was going bankrupt. Ivan had bought out his partner so Larry could retire, but the company owed too much money and interest rates were at 21%. I had majored in Finance at the UW, told him I needed something to do—I'd go down and see if there was anything to save. I said I would give it three years. That was 25 years ago now, funny how life happens while you're making other plans.

Last year we decided to start an MER newsletter for our customers—share some things we've learned, help you keep your engines healthy ... try to save you some money by passing on a few tips we've learned over the years, maybe share a little history. There is so much change every day, sharing information is more important than ever before.

I hope you will respond in kind, help us pass along any tips or thoughts that might make life easier for your fellow boaters and fishermen. Tell us what's working out there, or what's not, we'll pass it forward, try to make life a little easier for all of us.

Robert Allen, Pres.
Ph: 206-286-1817
bob@merequipment.com

Why Do Cylinder Liners & Heads Develop Pits?

Selective Cooling Additives & Pressurized Cooling Systems

Engines run hotter these days for a more efficient fuel burn—decreasing emissions, increasing efficiency. The heat is working for you, but hotter engines run hotter cooling systems.

To keep coolant from boiling, the pressure goes up, just like a pressure cooker on the stove. Likewise pressurized cooling systems get the higher temperatures by raising the coolant boiling point. Pressure, heat, & vibration bring those insidious tiny bubbles imploding along the water passages to cause pitting & cavitation. Making coolant additives all the more imperative since SCAs protectively coat head & cylinder surfaces in sacrifice to the cavitational implosions.

All to say—Additives are a sacrificial coating & must be replenished to protect the walls of the cooling system.

Coolant additives are like zincs: when they're doing their job, they get used up—
No Matter the Brand or Cost!

You don't put zincs on your hull one time and call it a done deal, no matter what kind of zinc. Failure to replace sacrificial components has consequences, and ... it's not so good *(see* Fab 4 *photos)*.

Pressure & Heat
When is Enough ... Enough?

Not all Pressure Caps are created equal. Each engine's designed for a specific water pressure with an appropriate cap.

Let's review **Science 101** *(there will not be a test)*: At sea level atmospheric pressure = 15 lbs. /sq. inch, where water boils at 212°F. *However, each additional lb. of pressure raises the boiling point 3°.*

Let's take a typical cooling system with a 13 lb. pressure cap: 13 lbs. x 3° = 39° so then 212° + 39° = 251° boiling point.

Additionally the properties of antifreeze at a 50/50 mix also raise the boiling point (5° for automotive antifreeze). Add 5° to 251° for a 256° boiling point—with this 13 lb. pressure cap.

So, really, use a pressure cap and don't be replacing it with any old one off the shelf, or you could be replacing other things soon enough. Bigger things.

Do's, Don'ts, *Never & Always*

Do not mix ethylene glycol- and propylene glycol-base coolants.

Do not add more SCAs than the recommended amount; **Don't** mix SCA brands.

Although John Deere COOL-GARD™ coolants do not require use of additives when new out of the bottle, *you* **Do** *still need to test & reapply!* ***To work they must deplete.*** **Don't** add SCAs when the system's drained and refilled with JD COOL-GARD™, but **Do** test coolant solution periodically during drain interval (at 600 hours or 12 months of operation—or as deemed necessary by testing, or as directed by coolant conditioner label). JD COOLANT CONDITIONER is recommended as an SCA in JD engines.

And just like milk, ***Coolant Test Strips*** have shelf life too, of about a year. Old strips, bad results.

Do install a coolant recovery tank if you don't already have one, so the coolant expands into a bottle and not the bilge.

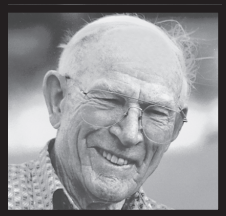
Never overfill the system.

ALWAYS recycle or properly dispose of coolant safely—it's toxic, tastes sweet, & can poison your kids & pets.

Never run your engine under load for extended periods of time without the appropriate pressure cap—keyword here is *appropriate*.

In a modern diesel engine, heat and pressure are a good thing; but, just like sex, too much of a good thing without protection can lead to unpleasant results.

SCAs—the prophylactics of the cooling system.



From the Founder—
Ivan Fox Remembers ... Fish Traps

Born in 1918, Ivan's life is a living bridge to a past we only read about in history books—Grandad John Currin was born to Irish immigrants in a covered wagon at the end of the Oregon Trail, 1851. 100 years later Ivan worked fish traps in Shelikof Strait, before outlawed by Alaska statehood, for San Juan Fishing & Packing. Not floating traps or fish weirs in streams—these were pile traps:

Raised on traps, kinda' hated to see them go. Then, kinda' glad. Helluva lot of work. San Juan ran a total of 7 traps; we had the most. The traps required a total of 1223 pilings and a total of 1002 rolls of galvanized wire, each roll measuring 6' x 200' long, ranging from 14 to 17 gauge. No. 7—Cape Raspberry Trap—had a lead over a half mile long into the strait.

We used two pile drivers for these jobs, the last built in '49. That driver is a monstrous barge: 70' long by 24' wide & it drew 6'. It was 128 tons gr. wt., & those gins stuck in the air—one was 66' in height, the other 70'—(to hold) the hammer. It was a big rig. Drop hammer weighed 5000 lbs. and the follower 1760 lbs., operated by steam winch. Took a good-sized boiler.

They brought piling alongside the driver, put a choker around the top of it, swung it straight up then down into the water vertical. They set the big steel follower on top to hold it in place, then they had this 5,000 lb. drop hammer, up and down, bangin' on the follower. 1223 pilings, drove every year—untreated peeled piling shipped out of Seattle, Doug fir, from 100' to 50', the shortest. Every year they got 4, 5 ft. shorter, had to freshen the tops & snipe the butts. Fall of year pulled 'em all out, stored for winter up on the beach. It's just an amazing amount of work under adverse conditions.

Yes, canneries put in and took out the traps every year, the Corps of Engineers citing them a navigation hazard. These drivers had living quarters, mess room, and a crew of 10 including foreman, hammerman and cook. Crews generally left canneries in early April—wouldn't see til late May or early June, til trap work was done. *Next: Why fish traps really ended*

Spilling fish-trap brail into tender.

PHOTO SOURCE: MUSEUM OF HISTORY & INDUSTRY