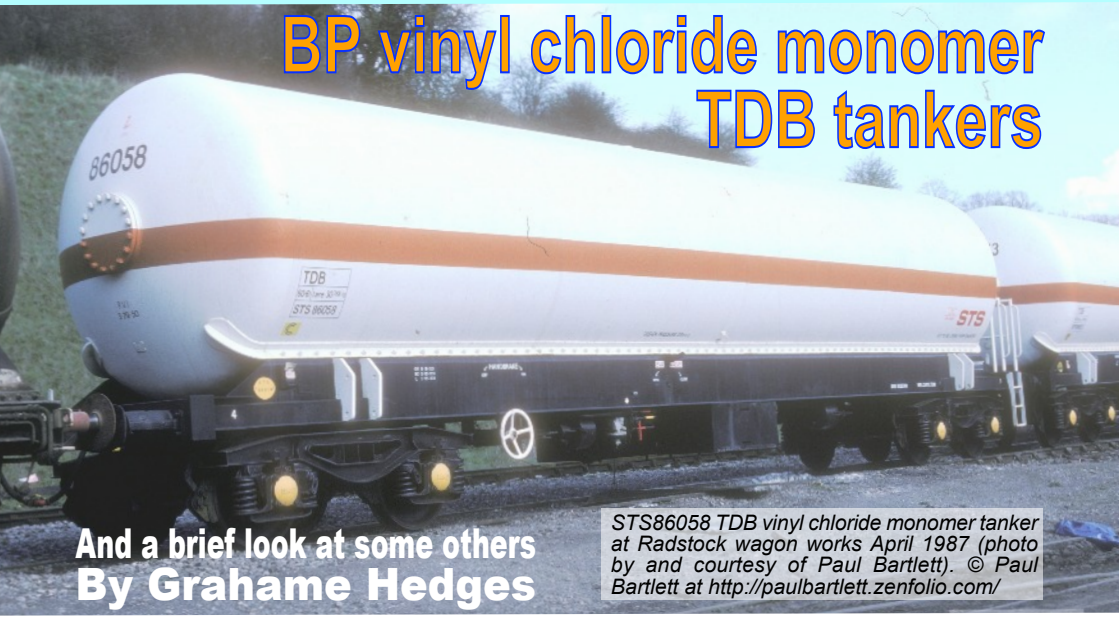
BASHING CHEMICAL WAGONS

BP vinyl chloride monomer TDB tankers



STS86058 TDB vinyl chloride monomer tanker at Radstock wagon works April 1987 (photo by and courtesy of Paul Bartlett). © Paul Bartlett at http://paulbartlett.zenfolio.com/

And a brief look at some others

By Grahame Hedges

Bashing refers to the gap between scratch-building and kit building which allows you to produce unique models that are not available either as RTR or as a kit. This is by adapting (or bashing) existing models and/or utilising parts from them or other models, parts from accessory suppliers and, if necessary, making any special unique bits yourself. For this chemical bogie tank wagon I used Farish TEA fuel tanker bodies and generally available parts such as bogies, wheels, buffers and etches.

Until the N Gauge Society TTA kit #37 came along, at the end of 2011, the only commercial and readily available British modern chemical tankers seemed to be the Peco 45t monobloc four-wheel tanker painted in special liveries such as Albright & Wilson phosphoric acid and their older style tanker branded as CMC sulphuric acid. However, I'm not sure that either are entirely accurate or authentic. More recently Farish have produced their 14t and 45t two-axle tankers in ICI maroon and ICI Methonal liveries. In addition there are some overseas types available, potentially of types that were operated on ferry services and could be seen in the UK, from manufacturers like Arnold, Fleischmann and Roco but they are obviously made to the smaller continental scale of 1:160.

With their bright and unusual liveries, chemical tankers can form eye-catching and somewhat different N gauge trains from the usual fare. Consequently, over the years I've had a go at attempting to produce a few based on

TDB Vinyl Chloride Monomer tankers basic data

Date built	: 1971	Tank body	: 100.9mm
Builder	: BREL (Ashford)	Tank width	: 18.1mm
Diagram	: TD007a	Length over buffers	: 113.2mm
Owner	: Storage & Transport Systems (STS)	Over head-stocks	: 104.8mm
Numbers	: 86050 - 86062	Bogie centres	: 80.3mm
Bogie type	: Y25C	Bogie wheelbase	: 12.2mm
GLW	: 92t	Wheel diameter	: 6.4mm

real examples (see the panel on the pages 26 and 27). More recently I thought I'd try my hand at bashing a BP vinyl chloride monomer TDB 60.3t capacity bogie tanker (see panel on page 26).

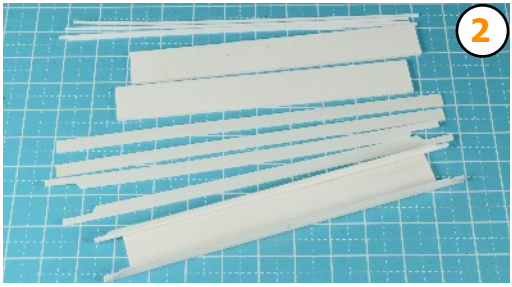
Thirteen of these wagons were built in 1971 so, hopefully, they were unlikely to be produced as a kit or RTR option that would be launched just as I completed my own version. Details, photos and a general arrangement drawing (from the Barrowmore Model Railway Groups website) were found on the internet, and carefully scrutinised.

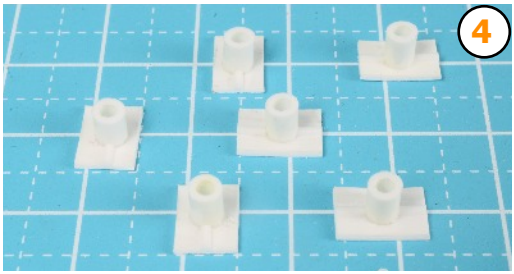
I checked my spares and leftover parts boxes and found sufficient TEA barrel halves, end caps and filler/catwalk inserts to make up three complete tank bodies but there were no under-frame/chassis as these had obviously been used on another project. I decided that with the unusually deep full length continuous sole-bars, and the need to use new bogies, I would scratch build suitable chassis' rather than acquire and adapt the Farish end stub frame type. And the three bodies meant that I'd attempt a rake of three.

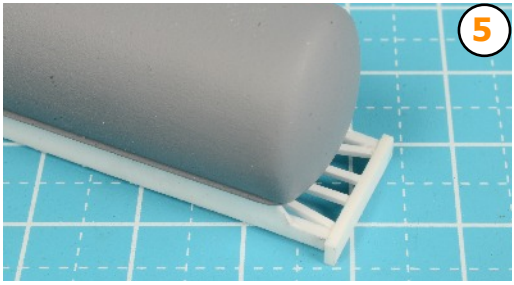
The barrels halves were assembled with the top insert glued in place and then the fillers, catwalk and underside locating pips were cut off. The bodies are the correct diameter but too long, so they were cut down to the length required and the end caps glued in place. All the holes (except those underneath) were filled with Stucco filler and when dry sanded smooth. Because the gas tanks appear to have more rounded domed ends (than the Farish fuel tanks) they were also shaped by careful filing, although there is a limit to this otherwise the plastic would get too thin and possibly be penetrated. A light dusting of primer helps to check for any gaps or irregularities (see photo #1).

Various pieces of plasticard sheet were cut to form three 'U' shaped channel subchassis' that the tanks could sit in (see photo #2) and the bogies mounted to. The solid floor section was deliberately shorter than the sides so that it couldn't be seen at the ends of the tank which are open framed on the prototype. Square section strip (from Evergreen) was used to provide a strengthening fillet at the joint and would also form part of the end framing.

Next to tackle were the bogie mounts so that the wagon wouldn't end up over scale height and towering over other models, and that it would run okay. Firstly I checked the wagon with a dry run by placing the sub-chassis and body on a set of bogies (Y25 from







ATM fitted with 6.2mm disc N-Train wheels) with a 1mm spacer and sat it on track next to a Farish TEA bogie tanker (see photo #3). It was a relatively good match and I was quite happy that any further adjustment could easily be accommodated as the build progressed.

The bogie mounts were formed from plastic tube fitted in to a hole drilled in to a 0.5mm plasticard rectangular base with a length of 0.5mm half round strip either side (see photo #4). They were fitted with the half round oriented across the wagon at one end and along the length of the wagon at the other to provide a kind of compensation. The hole in the tube helped allow it to be lined up accurately with a mark on the underside of the chassis when being glued in place and to take one of the Farish bogie retention pins.

Buffer beams were cut and glued at the chassis ends. The open framing was formed from square section strip cut and glued in place (see photo #5). There are also double protruding body lifting lugs on each side of the sole-bar above the bogie pivot points. These were cut from plasticard and glued in place.

Next I tackled the under-frame details. The GA drawing did not show the details so I had to work from photographs (Paul Barlett's wagon picture web-site being most helpful) although photographs tend to have the under-frame in shadow so details are fairly difficult to ascertain. The central cabinets (pressure control and unloading valves?) were fabricated from plasticard as open boxes and the cylinders filed to shape from rod, wrapped with thin strips of masking tape and super-glued to a thin plasticard base.

NGS buffers, carefully filed to a more appropriate shape, and etched draw hooks from TPM (Scalelink also offer them) were added to

Other Chemical tanker

Top left (A) : *An Arnold 'Gulf Gas' continental bogie tanker complete with sunshield. It seems ripe for conversion to a VTG ferry type.*

Bottom left (B) : *The NGS TTA chemical tanker kits (#37) are small diameter barrels on a 15ft airbraked chassis. They appear to be based on the 'standard' 1965 Charles Robert design for chlorine tanks. Several batches (1965 TRL 51410-51434, 1966-7 TRL 51561-51585, 1967-8 TRL 51649-51723), owned by Tiger Rail, were built initially for ICI, but were later transferred to Hays Chemicals in 1985. The caustic soda non-pressurised version with conical ends, that the kit alternatively builds in to, appear to be a similar Charles Roberts design and built in 1967 (TRL 51586-51648).*

Top right (C) **:** *A LPG TTA wagon bashed from a Peco 15ft chassis and part of a Farish TEA body with TPM etched hatch details and plasticard end override protection. Eleven batches of a fairly standard 40-45t LPG tank wagon were produced 1967-86 by various builders and owned and operated by a variety of companies. They do not have ladders and tank top catwalks and are filled and unloaded from valves located under a sliding hatch on the lower sides of the tank. Most, but*

the buffer beams. An etched brake-wheel was fitted to the sole-bar on one side (a discharge hand wheel?). It was super-glued to a length of wire that was then located and glued into a drilled hole. In addition etched brake wheels, located below the sole-bar, were super-glued to a length of wire that was then glued on to a plasticard under-frame support (see photo #6).

For the end walkways I thought I was fortunate in finding three of TPM's LPG tank conversion etches (ref 1809) in my spare etches box which each include two walkways (of different railing designs). As neither was a totally accurate style for the wagons it was somewhat hobsons choice but when one was cut out and folded up it was far too wide for the wagon. Resolution wasn't that easy.

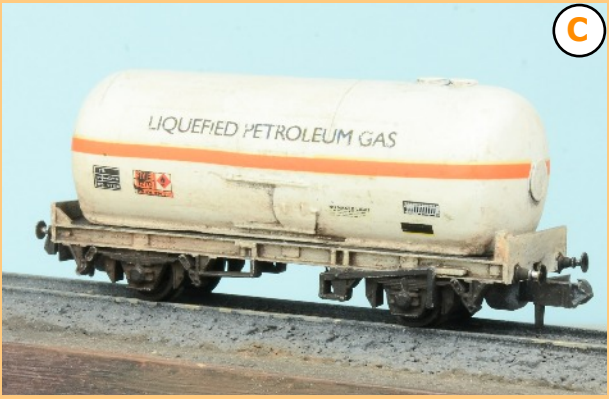
Firstly, I cut down the walkway floor to the right length for the width of the wagon. Then I bent up and super-glued wire to it to represent the railings. Surprising, despite being fiddly and potentially fragile, it worked (see photo #7). Having completed one, and realising there was still the inner rails and steps to consider, I embarked on the other two - had it been that there was a walkway at each end of the wagon, and six sets would be required, I think I'd have tried something else.

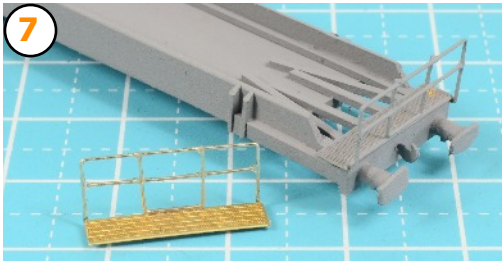
When complete they were super-glued in place. The walkways basically completed the chassis/under-frame sub assemblies and they were cleaned and given a coat of Halfords aerosol grey acrylic primer (see photo #8).

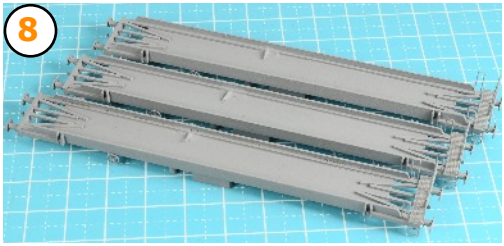
At the walkway end of the tank body there is a sliding hatch cover and at the other end is a circular inspection hatch bolted in place. The circular hatches were represented with solid etched brake wheels super-glued in place and the sliding hatch covers were cut from plasticard with the small grab handles bent up from wire

not all, have override protection above the end head-stocks. Due to an increase in demand for LPG products many have been re-furbished and the majority converted to air-braked.

Below right (D) : *This bogie tanker is based on the Fauvet-Girel built batch (STS 78654-78679) of 88t pressurised TCA tank wagons for Fisons Fertilisers. In the mid 1980s they were transferred to ICI (agricultural division). It is a simple adaptation of the Farish TEA tanker with continuous sole-bars cut from plasticard, adapted Gloucester GPS bogies and etched brake wheels.*







and glued in to drilled holes. These seemed to be the only details on the body and they were also given a coat of grey primer.

I had built and kept the body and the chassis/under-frame as separate sub-assemblies to make detailing and painting them easy - the body is basically white and the chassis black, which were applied with appropriate Humbrol acrylic aerosols (see photo #10). Then small details, such as axle box covers, railings and hand-wheels, were picked out in the appropriate contrast colour by brush. A tip for making the painting of details easier and ensuring that paint doesn't get on the surrounding bodywork is to cut a slot in a piece of paper and slip it under the detail part to act as a shield (see photo #11).

Originally the livery included the words 'BP Chemicals' in large lettering above the orange band at the right-hand end with the BP shield logo at the other. However, when they were refurbished in the early/mid 1980s they were out-shopped in the pressurised chemicals mandatory white and orange body, but without any branding, and the black sole-bars relieved with white details and railings. Paul Bartlett's website suggests that the early refurbishment was because they might have been transferred to ICI although isn't definite.

The orange band is available as a decal which saves the need for tricky masking and

painting. There are very few other transfers to add; TOPS and Hazchem panels, wagon numbers and overhead warnings on the ends, builder plates and owner (STS). When dry the completed sections were given a coat of matt varnish from an aerosol to seal the decals and give a more realistic patina. Finally, the two assemblies were mated together and the bogies added to complete the wagons.

I was quite pleased with the final models (see photos #9 & #11). However, they do seem a little plain in the unbranded livery and it looks like some details are missing from the rather featureless solebars - such as pipe-work and re-enforcing strapping - but I've studied the prototype photos and there is little else that could be added.

The models were actually quite quick to bash having undertaken the research and decided the build sequence and methodology. I guess I spent more time armchair modelling in working out, in my mind, the various stages and how they would affect each other and go together. It is important not to do things at an early stage that will make a later stage difficult or awkward. Ease and build simplicity should always be a major consideration - that way you don't end up frustrated and will enjoy the modelling process more.

Also take your time and try to be as accurate as possible - not just the fidelity to the prototype but with cutting parts and gluing them in place. Don't rush and take the attitude 'that'll do' when fettling and fitting a part, as if it's not quite right it may well impinge on a later stage making progress then

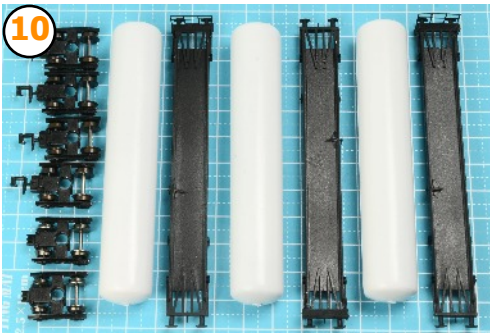
Chemical tanker liveries

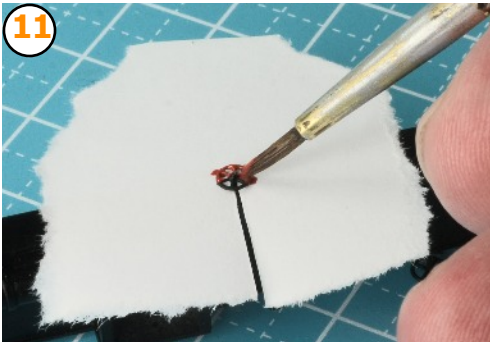
The white body with a horizontal orange band was introduced in the 1960s as a mandatory Railway Group Standard for liquefied and pressurised gases tank wagons. However, other less-hazardous chemical carrying wagons can be seen in a variety of colours. For example the NGS kit suggests a blue (sulphuric acid) livery and an ochre and black (molasses) scheme. The `Hazchem' warning panels were first introduced on British Rail in the mid 1970's, and these days they provide a welcome splash of colour to the lower left of the tank body or (less commonly) painted on a plate fitted to the chassis.

Scratch-building Details

There are various parts and detailing kits available to assist the modeller in converting, bashing or scratch building chemical tanker wagons;

- **Tank bodies** - The body barrels from old Farish bogie TEA tankers can be used although often chemical tanks wagons have barrels of a smaller diameter than the usual equivalent fuel tankers. These can be replicated with various diameter plastic pipe such as plumbing poly-pipe, over-flow pipe and Plastruct or Evergreen tube.
- **Catwalks and ladders** - Etched TPM kits (available from the NGS Shop) of alternative catwalks for Peco TTA wagons can be adapted for use on scratch built tanks. Additionally other suppliers (such as N Brass Loco, Etched Pixels and the American ones mentioned in Journal 4/16) produce suitable parts.
- **Body details** - TPM produce an etch especially to help convert either a TEA or two TTAs in to LPG versions. TPM also offers two types of conical ends especially to fit the Farish TEA wagon barrel.
- **Bogies** - A range of modern bogies (produced by the NGS and ATM/TPM) are now available separately in N gauge such as Y25 (cast and fabricated), Gloucester GPS 22.5, NACCO Axlemotion ESC1 and Ridemasters (see page 19 Journal 6/14).
- **Chassis details** - Etches of walkways, railings, brake wheels and ferry type lashing hooks and cleats are available (check out N Brass Loco, TPM andUltima/Etched Pixels)





difficult. Even when trying to be neat, tidy and accurate it is still easy to end up with things not quite right - my models have few hiccups such as buffer beams at a slight angle or not quite square. So with planning and careful building you are likely to get a few issues along the way but there is no reason to potentially make it worse with a slap-dash approach, inadequate consideration and lacking proper preparation.

Nonetheless, I had fun and enjoyed this project and now I have a small rake of three prototypical wagons that very few others are likely to have. With just about all of the parts used in their construction, either already to hand or left over from previous projects, the cost was also very reasonable. Nothing was specifically purchased to make them. Why not check out what bits you have and work out what you could bash.

The parts I used were: Farish TEA tank barrels; Plasticard (various thicknesses); Various sizes of Evergreen strip and tube; 0.31mm diameter wire; NGS/ATM/TPM Y25C bogies; Ntrain 6.2mm disc wheel-sets; NGS buffers (NGK084); TPM etched draw hooks (ref 1202); TPM/Ultima Etched brake-wheels; Halfords and Humbrol acrylic aerosol paints; and Fox transfers.

What is Vinyl Chloride Monomer?

Vinyl Chloride Monomer (VCM) is a colourless organochloride compound with a sweet smell and is highly toxic, flammable and carcinogenic. It is a chemical intermediate, not a final product, but is chiefly used to make polymer polyvinyl chloride (PVC) which is stable and nowhere near as acutely hazardous as the monomer. It is stored as a liquid and containers used for handling it at atmospheric temperature are always under pressure. Transporting VCM presents the same risks as transporting other flammable gases such as propane, butane (LPG) or natural gas and for which the same safety regulations apply with the transport vessels specially designed to be impact and corrosion resistant.