

Chilean steam locomotive list

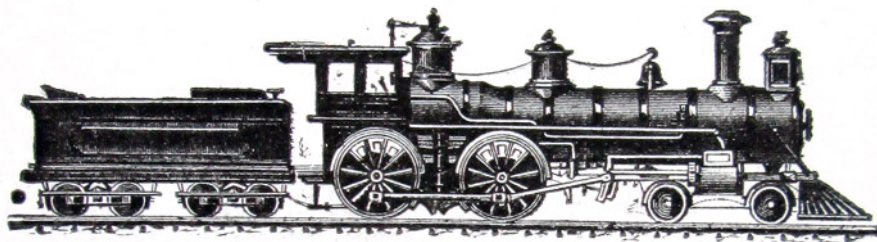
Part 3

Metre gauge locomotives

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This file can be found, along with the other four parts in the Chilean series and files for a number of South American countries, at <http://www.railwaysofthefarsouth.co.uk/05x03chileansteamlocos.html>



These lists, though benefitting from modern technology in both research and presentation, build upon those produced by many other investigators, from Wilfred Beckerlegge and Paul Dewhurst in the 1920s to John Kirchner and Allen Copeland eighty or ninety years later. As such, their content will, I hope, be helpful for researchers and authors in the future. Feel free to use this material, though an acknowledgement would be appreciated.

General introduction

These lists grew from the publication of the book *Railways at the End of the World* (The Araucaria Press, 1 Fellview, Casterton, Westmorland, UK ISBN 978-0-9928622-0-6), back in 2014. During the research undertaken by David Sinclair and I when gathering information for that volume, it had sometimes been frustrating when locomotives in southern Chile could not be easily identified.

Once the book had been published there was more time available, and it gradually became obvious that a list of the engines of the Chilean state railways (*EFE*) would have to cover the whole country to be of any use, and thus the parts of the list expanded all the way up to Arica. In 2020, during the Covid lockdowns, the first moves were made to extend such cover to the other smaller South American countries, beginning with Ecuador and then moving on to Bolivia, Paraguay and Uruguay.

The foundations were built upon earlier lists created by others such as Allen Copeland, John Kirchner, and Reimar Holzinger. Additional information is being added bit by bit to their work. Photographs have also been added, though these have been kept small and at low resolution, partly to reduce the file sizes and partly to minimise the risk that copyright owners will object. I will be happy to remove items if anyone believes I have been too presumptuous. The main purpose of the images is in any case to enable locos spotted in other photographs elsewhere to be identified.

When high-resolution versions are likely to be available from museums and archives, this has been flagged up, to encourage interested readers to purchase what they need from those who care for historic drawings or photographs.

As news of this work has spread, assistance has come from a large number of other researchers, including in particular Andrew Batory, Derek Hyland, Harold Middleton Nagel, Pablo Moraga Feliu, Martin Murray, Jens Schindler, John Schultz and Chris West. Grateful thanks is due to their selfless willingness to share information and images.

Whilst many of the written sources consulted have been in Spanish, these lists are currently solely available in English. This partly results from my own lack of linguistic confidence, but is also a reflection of the fact that keeping a fast-changing document synchronised in two different tongues is very time-consuming. Nevertheless, quotes from historic documents have usually been left in Spanish and it is to be hoped that in the future a Spanish version of the whole work can be created.

Close examination of these pages is likely to remain strictly a minority interest, whilst even fewer are likely to print out all 4600+ pages! Thus the files have been designed to be read on screen, with hyper-links from the contents page to aid in finding each section. The density of information is likely to discourage browsing on a mobile phone, but gradually the layout is being optimised for display on tablets as well as larger computers.

It will be obvious that this is a work still in progress, with updates being uploaded to the web on a quarterly basis at present. Comments, additional items of information or images, and suggestions to improve the layout, would all be very much appreciated, and the author can be contacted at **martincoombs11@gmail.com**

Introducción general

Estas listas crecieron a partir de la publicación del libro Ferrocarriles en el fin del mundo (The Araucaria Press, 1 Fellview, Casterton, Westmorland, UK ISBN 978-0-9928622-0-6), en 2014. Durante la investigación realizada por David Sinclair y yo cuando recopilábamos información para ese volumen, a veces había sido frustrante cuando las locomotoras en el sur de Chile no podían identificarse fácilmente.

Una vez que se publicó el libro hubo más tiempo disponible, y gradualmente se hizo evidente que una lista de las locomotoras de los Ferrocarriles del Estado de Chile (EFE) tendría que cubrir todo el país para ser útil, y por lo tanto las partes de la lista ampliada hasta Arica. En 2020, durante los bloqueos de Covid, se dieron los primeros pasos para extender dicha cobertura a los otros países sudamericanos más pequeños, comenzando con Ecuador y luego pasando a Bolivia, Paraguay y Uruguay.

Los cimientos se construyeron sobre listas anteriores creadas por otros como Allen Copeland, John Kirchner y Reimar Holzinger. Se está agregando información adicional poco a poco a su trabajo. También se han agregado fotografías, aunque se han mantenido pequeñas y de baja resolución, en parte para reducir el tamaño de los archivos y en parte para minimizar el riesgo de que los propietarios de los derechos de autor se opongan. Estaré encantado de eliminar elementos si alguien cree que he sido demasiado presuntuoso. El objetivo principal de las imágenes es, en cualquier caso, permitir la identificación de locomotoras vistas en otras fotografías en otros lugares. Cuando es probable que haya versiones de alta resolución disponibles en museos y archivos, esto se ha señalado para alentar a los lectores interesados a comprar lo que necesitan de aquellos que se preocupan por dibujos o fotografías históricas.

A medida que se ha difundido la noticia de este trabajo, ha llegado la ayuda de un gran número de otros investigadores, incluidos en particular Andrew Batory, Derek Hyland, Harold Middleton Nagel, Pablo Moraga Feliu, Martin Murray, Jens Schindler, John Schultz y Chris West. El agradecimiento se debe a su disposición desinteresada para compartir información e imágenes.

Si bien muchas de las fuentes escritas consultadas están en español, estas listas actualmente solo están disponibles en inglés. Esto se debe en parte a mi propia falta de confianza lingüística, pero también es un reflejo del hecho de que mantener un documento que cambia rápidamente sincronizado en dos idiomas diferentes lleva mucho tiempo. No obstante, las citas de documentos históricos se han dejado habitualmente en español y es de esperar que en el futuro se pueda crear una versión en español de la obra completa.

Es probable que un examen minucioso de estas páginas siga siendo estrictamente un interés minoritario, ¡mientras que es probable que incluso menos impriman las más de 4600 páginas! Así, los archivos han sido diseñados para ser leídos en pantalla, con hipervínculos desde la página de contenidos para ayudar a encontrar cada sección. Es probable que la densidad de la información desaliente la navegación en un teléfono móvil, pero gradualmente el diseño se está optimizando para mostrarse en tabletas y en computadoras más grandes.

Será obvio que este es un trabajo aún en progreso, con actualizaciones que se cargan en la web trimestralmente en la actualidad. Comentarios, elementos adicionales de información o imágenes, y sugerencias para mejorar el diseño, serán muy apreciados, y se puede contactar al autor en **martincoombs11@gmail.com**

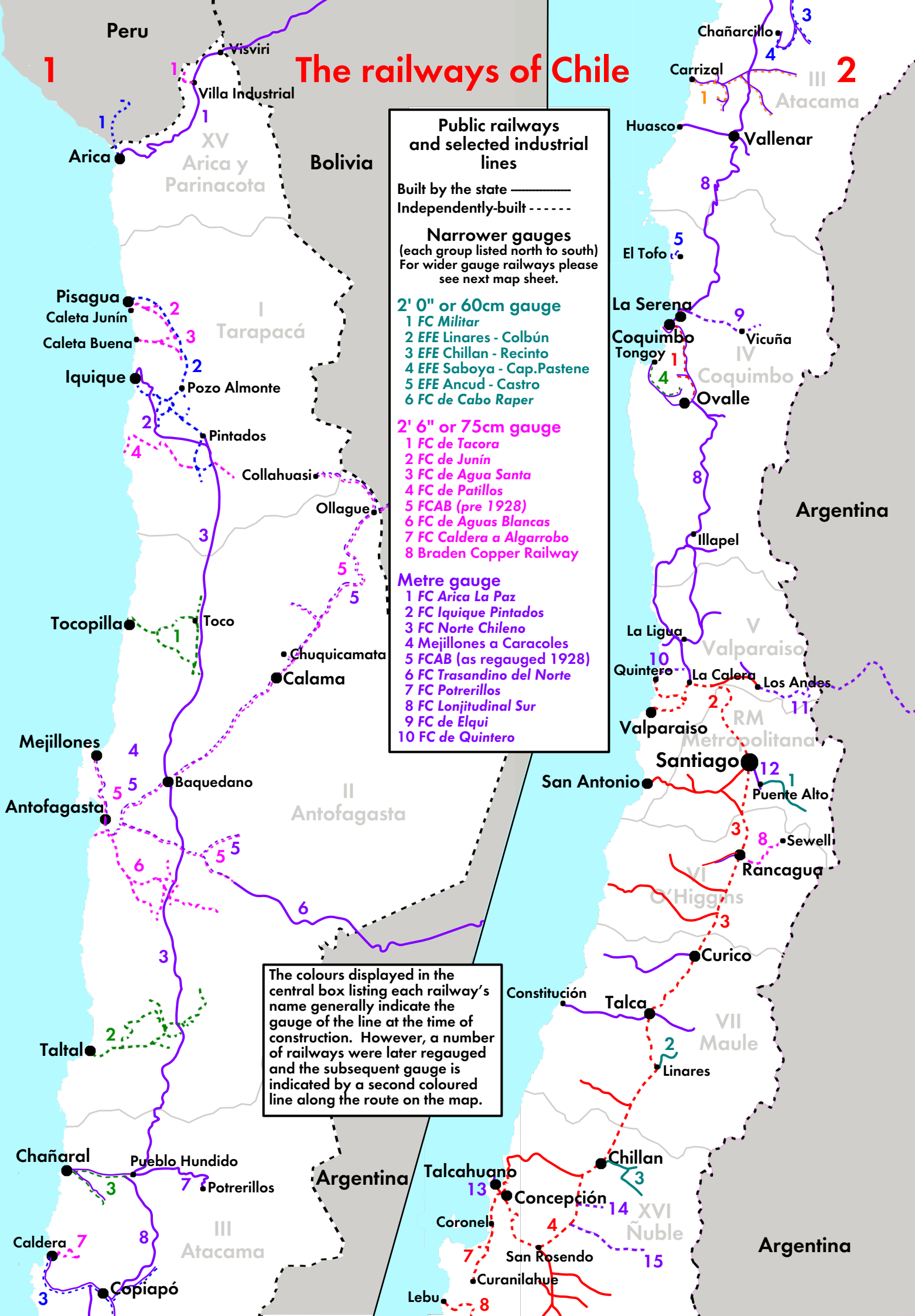
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The railways of Chile



4

The railways of Chile

List continued from previous map

Wider gauges
(each group listed north to south)
For narrower gauge railways
please see previous map sheet.

Metre gauge (continued)

- 11 FC Trasandino
- 12 FC Llano de Maipo
- 13 Apost. Naval de Talcahuano
- 14 FC Gral. Cruz a Cartago
- 15 FC Trasandino por Antuco
- 16 FC Trasandino por S. Martín

3' 6" gauge

- 1 FC Tocopilla - Toco
- 2 FC de Taltal
- 3 FC de Chañaral
- 4 FC de Tongoy
- 5 Soc.Carb. de Magallanes

4' 2" or 4' 6" gauge

- 1 FC de Carrizal
- 2 Lota coal mines

4' 8" gauge

- 1 FC Arica Tacna
- 2 Nitrate Railways
- 3 FC de Copiapó
- 4 Copiapó Extension Railway
- 5 FC Cruz Grande al Tofo

5' 6" gauge

- 1 FC de Coquimbo
- 2 FC Santiago Valparaíso
- 3 FC del Sur
- 4 FCCCiT
- 5 EFE Red Sur
- 6 FC Freire a Toltén
- 7 FC Arauco
- 8 FC Lebu á Los Sauces

Cabo Raper
lighthouse

XI
Aysén

Argentina

Puerto Natales

XII
Magallanes

5 Punta Arenas

Argentina

Kilometres

0

160

320

0

100

200

Miles

Lebu

Renaico

Los Angeles

3

Traiguén

Victoria

Curacautín

La Araucanía

Temuco

Valdivia

XIV
Los Ríos

Osorno

Puerto Montt

Ancud

X
Los Lagos

Castro

Argentina

Other parts of this work

This is one of a number of PDF files covering the steam locomotives of Chile and several of the smaller South American countries across a wide variety of gauges. The other files can be accessed by clicking on the red hyperlinks listed below. It is hoped that further files will be added in due course.

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| Part 19 | Cuban locomotives listed by builders |

Notes and sources

Sources include:

Ministerio de Obras Públicas and *Ministerio de Ferrocarriles* correspondence files conserved in the *Archivo de la Administración (ArNA)* in Santiago. These are referred to by their file numbers beginning MOBR or MFER respectively, followed by a number of up to four figures.

Particular help has been given by Pablo Moraga and Jens Schindler, and Ian Thomson, Harold Middleton and Andrew Batory have also provided extra facts.

[0] Lists created by Allen Copeland and John Kirchner in the 1990s.

[1] *DOP* annual *memorias*, as available.

[2] Full list of *EFE* loco and stock purchases from 1902-20 in *EFE memoria anual* 1919.

[3] *EFE* annual *memorias*, mostly consulted in the library of the *Ministerio de Transportes y Telecomunicaciones* in Santiago.

[4] *EFE* working timetable appendix 1939, or similar lists for later years.

[5] *Red Norte* loco fleet tables in the 1919 *EFE memoria anual*.

[6] Comment from Ian Thomson 2015.

[7] Article in *Anales del Instituto de Ingenieros de Chile*, 1909 issue 4 to 1910 issue 8.

[8] Article in *Anales del Instituto de Ingenieros de Chile*, 1920 issue 6.

[9] Article in *Anales del Instituto de Ingenieros de Chile*, 1923 issue 3.

[10] Report on the *Reorganizacion de los ferrocarriles del Provincia de Coquimbo*, Valparaiso 1894.

[11] Ian Thomson's *Red Norte* book 1997.

[12] 1910 exhibition report on all locos built in Chile.

[13] *Depto. Tracc. y Maestranzas* loco list 1951.

[14] Pablo Moraga's *EFE Metricas* old numbers file.

[15] The 1930 US Dept. of Commerce report.

[16] *The Railways of Chile*, Wilfred Simms, five volumes, 1999-2000.

[17] Santiago Marin Vicuña, *Los Ferrocarriles de Chile*, various editions. 4th edition 1916.

[18] Alberto Decombe, *Historia del Ferrocarril de Arica a La Paz*, 1913, *Ministerio de Industria i de Obras Públicas*.

[19] *EFE* metre gauge loco list from mid-1950s.

[20] List provided by *FCALP* to SLS library in 1937.

[21] Reg Carter's lists in SLS library file L8655.

[22] P. C Dewhurst, *Locomotive Practice on the Chilian Transandine Railway*, *The Locomotive* magazine, 14th June 1914.

[23] SLS library file L8841 containing lists/notes by Mike Page, Reg Carter & Peter Mitchie.

[24] Javier Gandarilla M. *Informe sobre la red Central Norte pasado al Ministerio de Ferrocarriles*, in *Anales del Instituto de Ingenieros de Chile*, 1919.

[25] Photo on Restoration and Archiving Trust website at <http://gwrarchive.org/index.php>

[26] *Caracteristicas y dotacion de locomotoras trocha 1 metro*, *Red Norte*, in *EFE* working timetable 46th edition summer 1941, or 48th edition summer 1942, as appropriate.

[27] Blue-print *EFE* list no. 1707 from December 1942, supplied by PMF from unknown source.

[28] Summary list of locos 'ingresos' or 'bajos' during 1957, supplied by PMF.

[29] Archive of photo albums owned by Sir John Jackson, now in the Centre for Research Collections at the University of Edinburgh.

[30] <http://www.steamlocomotive.com/>

[31] *Actas de las Sesiones del Consejo Administrativo de los Ferrocarriles del Estado*, (those between May 1915 and December 1916, also years 1918 and 1920, so far seen via Hathi Trust website). Santiago.

[32] *El tramo a cremallera del Ferrocarril de Arica a La Paz*, Ian Thomson.
<http://www.amigosdeltren.cl/tramo-a-cremallera-fc-arica-la-paz>

- [33] Report *Red Central Norte 2*, in *Anales del Insituto Ingeniero de Chile* in 1919. by Javier Gandarillas M.
- [34] *The Yorkshire Engine Company*, Tony Vernon.
- [35] *The Transandine Route part 2*, Donald Binns, in *Locomotives International* issue no. 2, 1989.
- [36] *The locomotives of the Transandine Route, the end of the story*, Ian Thomson, *Locomotives International* issue 5, 1990.
- [37] *The FCAB's last try at modernizing its steam fleet: the fitting of a Giesl ejector to 2-8-4T no. 45*, Ian Thomson, in *Locomotives International* issue 44, 1998.
- [38] *The Indian summer of steam on the Antofagasta (Chili) & Bolivia Railway*, Ian Thomson, in *Locomotives International Annual No. 1*, 2014?
- [39] Speculation on the history of a pair of YEC0 0-6-0Ts, one of which worked on the construction of the *FCTC*, in *Locomotives International* issue 24, 1994.
- [40] *Estudio de la explotacion de la linea de Curicó a Hualañé, suponiendola prolongada hasta Iloco i teniendo frente a Licanten un puente carretero que permita el acceso a la linea de los productos de Curepto, etc.* thesis 'ejercicio final' for the *curso de caminos i ferrocarriles* at the *Universidad de Chile*, Señor Fransisco Gustavo Leighton, 1918.
- [41] Lima list of locos sent to Chile, response to enquiry by P. C. Dewhurst in 1927. In Dewhurst collection at NRM, York.
- [42] *Narraciones Historicas de Antofagasta*, by Sr. Isaac Arce Ramírez, 1930. Available at <http://librosmaravillosos.com/narracioneshistoricasdeantofagasta/index.html>
- [43] Allocation of locos at Coquimbo and mileages, in 1906-7. in file MOBR1910 at *ArNAd*.
- [44] Roberto Montandon photo archive at <http://www.archivomontandon.cl/>
- [45] *Boletin de la Sociedad Nacional de la Minería*, 34 volumes 1883-1918.
- [46] *Front Page News: Trying to Unravel the Story of the Chilean Transandine Esslingen Rack equipped 0-6-8-0Ts*, Ian Thomson Newman, in *Locomotives International* issue no. 71, August-September 2004.
- [47] *The remains of the FCTC semi-articulated Esslingen locomotives 3477 and 3623*, Jens Schindler, unpublished notes 2014.
- [48] *Railways of the Andes*, Brian Fawcett, 1963, 2nd edition published 1997 by Plateway Pres.
- [49] *El Puerto de Talcahuano i sus Obras de Mejoramiento*, por Alberto Fagalde 1895, available at <http://www.memoriachilena.gob.cl/archivos2/pdfs/MC0067647.pdf>
- [50] An unpublished list of locos that had worked on the *FCALP*, Ian Thomson et al, 1992.
- [51] *Trigesimo-setima memoria (correspondiente al año 1920) de los FFCC del Estado*. on Hathi Trust website, scanned very poorly by Univ. of Michigan.
- [52] *Boletin del Ministerio de Industria y Obras Públicas*, published annually. Large volumes tending to be biased toward legal and financial information rather than technical details, but odd items of useful info can be gleaned. Only years 1888, 1890, 1893, 1908 and ??? have been examined.
- [53] *The Merryweather Inspection Locomotive*, by R. A. S. Abbott, article in *The Model Engineer*, no. 3355, 18-31 October 1968, pp -10-12 and 1031.
- [54] *The Transandine Route parts 1 and 2*, Donald Binns, 1989, in *Locomotives International* issue 1 and 2.
- [55] <https://trenesdelperu.blogspot.com/2014/09/ferrocarril-mejillones-caracoles.html>
- [56] *Monografía del Ferrocarril de Potrerillos. Historia y objeto del ferrocarril* por O.M.Kuchs. Santiago, 1923. Not yet examined.
- [57] *Recuerdos del Tren Longino*, Jorge Fuentes Campos, 2014, https://issuu.com/jotabece/docs/tren_longino
- [58] *FCALP* annual report for the year 1929, kindly forwarded by Sr. Felipe Radrigan.

These lists cover first of all the various constituent railways which contributed locomotives to the latter-day *EFE* (Chilean State Railways) fleet. These include the *FC de Elqui*, the various parts of the *Longitudinal Sud*, the *FC Arica-La Paz*, the *FC Iquique a Pintados*, the Chilean Northern railway, the *FC Trasandino Chileno*, and the *Dirección de Obras Públicas*. Then comes a list of the metre gauge locos which were numbered in the *EFE*'s 1902 joint numbering

scheme which encompassed new arrivals on both broad and metre gauges. This is followed by the main *EFE* 3000+ numbering scheme, including a large number of locos previously encountered in one or other of the earlier sections. Finally, any metre gauge lines that did not fall within the *EFE*'s ambit at any time are covered.

Abbreviations used:

<i>MSB</i>	<i>Maestranza San Bernardo</i>	<i>RN</i>	<i>Red Norte</i>	<i>RS</i>	<i>Red Sur</i>
<i>FCTC</i>	<i>Ferrocarril Transandino Chileno</i>	<i>EFE</i>	<i>Empresa de los Ferrocarriles del Estado</i>		
<i>FCALP</i>	<i>Ferrocarril Arica - La Paz</i>	<i>FCIP</i>	<i>Ferrocarril Iquique - Pintados</i>		
<i>FCIPH</i>	<i>Ferrocarril Iquique a Pueblo Huido</i>	<i>FCNC</i>	<i>Ferrocarril Norte de Chile</i>		
<i>BLW</i>	<i>Baldwin Locomotive Works</i>	<i>cyls.</i>	<i>cylinder bore x stroke</i>		
<i>d/w</i>	<i>driving wheel diameter</i>	<i>w/n</i>	<i>works number</i>		
<i>ep</i>	<i>entregado provisorio (= transferred provisionally)</i>	<i>DOP</i>	<i>Dirección de Obras Públicas</i>		

Dimensions

Imperial unit driving wheel and cylinder dimensions, ie. in inches, have been added if it seems likely that they were originally created in that system.

Photographs

Photos have been added here solely to aid in the identification of locos seen in other images elsewhere. They have been found from many different sources, and may still be in copyright. For those reasons, and to keep the file sizes down, they are of low resolution, the majority being only 600 pixels across. The names of photographers will be added as time permits. As these documents are likely to have a very limited readership and are not being produced commercially, it is hoped that copyright holders will understand and permit their presence here. If not, please contact the author and they can be removed.

Rack locomotives

The wheel arrangements of the rack and adhesion locomotives of the *Trasandino Chileno*, the *Lonjitudinal Sur* and the *FCALP* are set out in this file as if the locos were normal adhesion locos but with the usual Whyte notation supplemented by 'z' and the number of rack pinions' following the wheels amidst which the pinions are located. 'z' in this case stands for *zahnrad*, which is the German word for rack. For example, the *Lonj. Sur* and *FCALP* eight-coupled tank locos of *tipos Ua* and *Uc* looked superficially as if they were 2-8-2Ts, but actually had two rack pinions within the main group of driving wheels. They are thus designated here as 2-8z2-2T. Similarly, the *FCALP*'s unsatisfactory Saronno-built monsters sometimes designated 0-4-10-0T were actually 4-10-0Ts when running on adhesion lines as the front bogie played no part in the transmission of power. However, that same front bogie carried two rack pinions, and thus the locos are labelled here as 4z2-10-0Ts.

3.1 Constituent parts of eventual *EFE* lists

3.1.1 *El FC de Elqui*

1884-1888

Background

1000mm gauge. Concession granted 1882. Opened 1884 from La Serena to Vicuña, and to Rivadavia in 1886. 78 km. long. The Río Elqui caused damage to the works on several occasions during construction, and then catastrophically in 1888. A report by Agustin Ross in 1894 suggests that the original company had had three mainline engines and several smaller ones []. The railway was then taken over by the state. Sources: [scans of *FC Elqui* lists from Pablo Moraga], and source 12). The purchase by the state was authorised by *Decreto 831* of 8th April 1890, but may not have taken effect until later. One source says 1895 was the takeover date. Reconstruction on a new alignment was contracted by the *DOP* in 1897 to *Coo i Sotomayor*, as far as Pelicano, with the remaining length to Rivadavia being added to the contract early in 1898. In 1901 there were 11 locos on this line for construction and operational uses.

Early reports of the board of directors

Very kindly supplied by Sr. Felipe Radrigan. Note that these have been translated by Sr. Radrigan from the original Spanish.

Report for the first semester 1884

Locomotives and rolling stock. – One of the two locomotives ordered from England with most of the rolling stock has arrived and they are made of very good materials and all very well built. Last March, two used Locomotives were purchased in Iquique, at very convenient prices for the Company, the progress achieved in laying rails is largely due to these machines.

Report for the second semester 1884

The material ordered from England has arrived, with the exception of the cargo expected on ship *Bellaport*, which consists of a locomotive, a first-class passenger car, and 300 tons of rails. The shipment should have arrived in June of last year, but unfortunately the ship had to arrive in Montevideo and return for a second time.

Locomotives and rolling stock. – All the locomotives have provided good service and are in good condition. However, **No. 2** ordered from England is greatly needed, as is the 1st class coach for passengers, which should have arrived six or seven months ago.

We know that the ship in which they are coming has had to enter Montevideo twice for repairs and that it must have left again on a trip to this coast on the 10th of last month, and must therefore arrive, more or less, at the end of the current month.

Report for the first semester 1885

At the end of April, Locomotive **No. 2 (La Serena)**, and a first class car for passengers, were delivered to traffic, and both the engine and the car have provided proper services to date.

Report for the second semester 1885

Machinery and equipment – The rolling stock in service is in good condition, and in the next semester it is expected to provide traffic with 8 cargo cars and three passenger cars that are on the way.

Report for the first semester 1886

Machinery and equipment – The costs of conservation and renewal of machinery and equipment, which amount to \$9,677 27 cts. have been increased by the repair of the boiler of Locomotive **No. 2**. The remaining locomotives have received the necessary repairs and to date, they are all in active service.

During the semester, 20 freight cars have been received from England, so that there are currently 55 cars for traffic service, and 20 more have been ordered and a new Locomotive equal to the two received previously.

Report for the second semester 1886

Machinery and equipment – In February of this year, the arrival of a new machine is expected.

Report for the first semester 1887

Machinery and equipment – At the beginning of April of this year, Locomotive **No. 3 (Rivadavia)** was delivered to traffic, which currently provides good services; and with which the Company has three large Locomotives for passenger and cargo traffic.

Report for the second semester 1887

Machinery and equipment – The three Locomotives, **Serena, Elqui** and **Rivadavia**, have supported the transportation of cargo and passenger traffic during the semester; However, in September, **La Serena No. 1** was overturned next to the line, and suffered some damage that was repaired, and is currently in service.

The two small Locomotives, Nos. **4** and **5**, have been used in the conservation of the line and are in good condition.

Report for the first semester 1888

Machinery and equipment

During this semester it will be necessary to give a general repair to the **Serena** Locomotive **No. 2**; The others are currently in good condition and so are the other rolling stock. The Locomotives have traveled a distance of 39,268 Kilometers with an average coal consumption of 6/8 kilos per Kilometer, having been under steam for 3,226 hours.

4-6-0 d/w 1067mm 42", cyls. 330x508mm 13"x20", built by Black Hawthorn in 1883-1884, and 1886

Adhesive 15T, total 21T, BP 140psi, for mixed traffic. BH list and C&F catalogue say cyls. were 13x19", and [MOBR1012] says 330x480mm. Via Chas.Lambert & Co. of London. Adams type bogie. These may later have had tanks added to the loco as well as having tenders. [MOBR1012] adds details as follows: bogie wheels 24", boiler 1m diam and 3m length, copper firebox, 2 6mm injectors, bp 9 atmos., 6-wheeled tenders with 5500litre tanks. First two shipped from Cardiff or Newport in early 1884. NB The directors' reports quoted above conflict in whether the name '**La SERENA**' was on loco no. **1** or no. **2**. However, the mileage tables consistently show it on no. **2**, so that what is shown here.

1 'COQUIMBO' or 'ELQUI'	w/n 751	2nd half of 1887: ran on 47 days, totalling 4017km. later became <i>EFE 3041</i> , see <i>DOP</i> section below.
2 'LA SERENA'	w/n 752	2nd half of 1887: ran on 78 days, totalling 11647km. later became <i>EFE 3042</i> .
3 'LA RIVADAVIA'	w/n 878	2nd half of 1887: ran on 104 days, totalling 15388km. later became <i>EFE 3043</i>



FC de Elqui no. **2 'LA SERENA'**. Photo from a Chapman & Furneaux catalogue in the SLS library by courtesy of Chris West.

A naming puzzle

A report in [MOBR1128] gives the name of '**JORJE MONTT**' to "una magnifica locomotora", "de mucho poder", and "una antigua locomotora Inglesa" which was described as a 4-6-0 coming from the Elqui company. Perhaps this was a renaming of one of the locos listed above, though no. **1 'ELQUI'** seems to have retained its name in *DOP* service. The description of this engine as an English 4-6-0 seems to rule out confusion with one of the Schneider 4-4-0s also with this name. The name '**La SERENA**', was carried also by an engine of the Coquimbo railway, so perhaps that name was the one that was changed.

Second-hand purchases

The directors' report for the first half of 1884, quoted above, makes it clear that engines **4** and **5** had been purchased fairly cheaply in Iquique. However, so far their original owner is unknown.

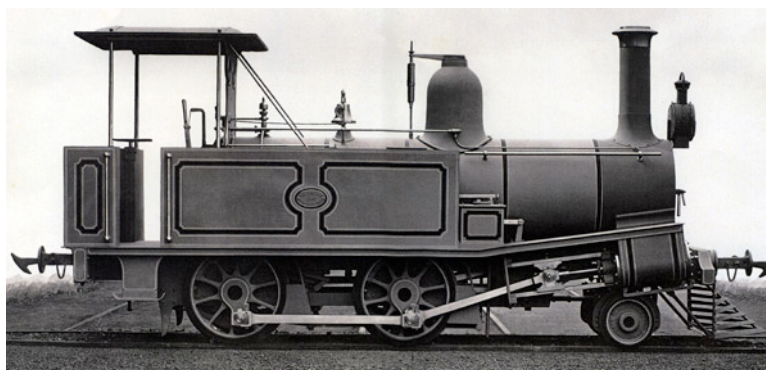
2-4-0T d/w 36", cyls. 10"x18", built by Neilson in 1878?, BP 140 psi, for ballast traffic

First evidence found in [MOBR1012]. This was probably the loco as numbered below and ordered for Iquique via Mathison & Beausire of Liverpool (who were agents active on the west coast of South America at that time). It clearly had worked at Iquique and then been bought second-hand. Built as Neilson order no. E478 dated 14/3/1878, identical to order E414 for NZ Government Railways apart from change of gauge to 3' 4" (sic) and addition of Blake's direct acting boiler feed pump. NB The photo shows one of the earlier NZ locos. Delivery was to be 4 months from order or earlier if possible. [MOBR1012] adds details as follows: pony wheels 45cm diam., bp 9 atmos., and confirms built by Neilson.

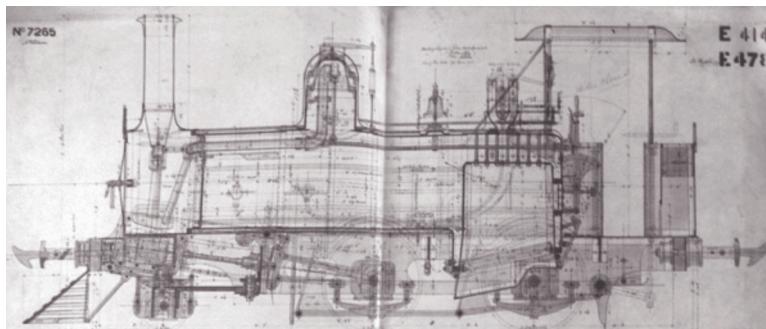
4 'LA COMPAÑÍA'

w/n 2381

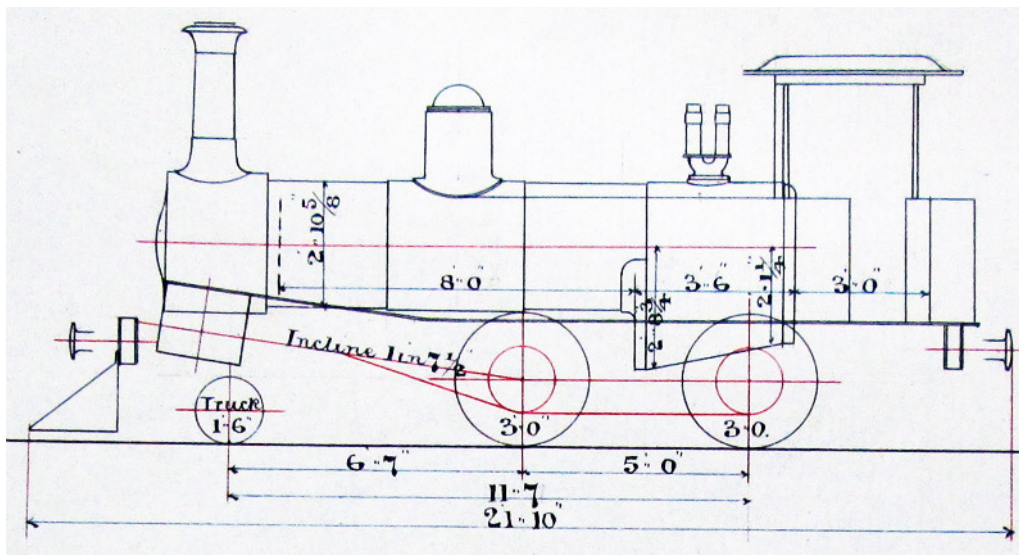
2nd half of 1887: ran on 113 days, totalling 9507km. After takeover loco seems to have been renamed **'EL MOLLE'** for use by the *DOP*; see below, and later became *EFE* no. **3016**.



Neilson builder's pic of one of the earlier NZGR D class locos of this type.



These Neilson drawings, a GA side elevation and a sketch from the spec. book, show that the Chilean loco had safety valves over the firebox rather than on the dome like the earlier New Zealand engines.



0-4-0T d/w 28½", cyls. 7¼"x12", built by Neilson in 1872

Mentioned in [MOBR1128] [MOBR1012] says d/w 710mm and cyls. 184x330mm. bp 7 atmos.

5 'LA TETERA'

2nd half of 1887: ran on 111 days, totalling 6844km.

BP 100 psi, for ballast traffic. After state takeover loco went to DOP. The name 'LA TETERA' is effectively calling the engine 'The kettle' or 'The teapot', and may well have begun as an affectionate or disparaging nick-name.

Days of operation and kilometreages run during the first five years of the railway's life

Loco nos.	1	2	3	4	5
Year and semester					
1885 1	116	31	31	30	
	13920	3720	3720	3186	
1885 2	123	124	120	125	
	11452	139976	6348	7948	
1886 1	126	126	156	153	
	12024	18629	7018	9250	
1886 2	96	86	140	145	
	14134	13037	5773	12113	
1887 1	112	73	31	136	6
	16373	10510	4444	9340	188
1887 2	47	78	104	113	111
	4017	11647	15388	9507	6844
1888 1	51	54	76	69	69
	7854	8529	11906	5528	5451

Three additional possibilities

The following metre gauge locos may have been on this railway, though only the last of the three has been confirmed as belonging here. However, file [MOBR1012] does not list these latter locos, only nos. 1-5. Various other lists also only show locos 1-5, so any additional machines may have been owned separately, eg. by a connected industrial user.

0-4-0ST d/w and cyls. various see notes for each loco, built by Black Hawthorn in 1881 and 1882.

? w/n 644 d/w 30", cyls. 8"x14". For F. Youle & Co., London, for export, possibly to Chile though not quite the same as the two following locos?

?	w/n 669	d/w 24", cyls. 6½"x12". for Matheus Richards & Co., London for Chile. ('Matthews Richards' in BH list.)
?	w/n 671	d/w 24", cyls. 6½"x12". for Matheus Richards & Co., London for Chile. Confirmed ex <i>FC de Elqui</i> by reference in <i>DOP memoria</i> 1902 p265. See following pages for <i>DOP</i> loco named ' VICTORINO A. LASTARRÍA '. [MOBR1128] says this engine was in service on the <i>FC de</i> <i>Elqui</i> from October 1887.

3.1.2 New government-built metre gauge routes in the 1890s, and first generation locos of *el Dirección de Obras Públicas*

It is almost impossible to separate the locos of the *Dirección de Obras Públicas* from those of the new state-owned Calera to Cabildo line and more northerly *ferrocarriles aislados* during the 1890s and early 1900s. The *DOP* managed the growth of the metre gauge, awarding construction contracts, and ordering and then hiring out locos and rolling stock for the duration of the work. Some of the locos had been taken over with the *FC de Elqui* whilst others were purchased new for the new sections of line. On completion of each length, the locos and rolling stock would be taken back into *DOP* hands and if appropriate used during the initial months of operation until the eventual hand-over to the permanent management. A few would have remained under *DOP* control, moving on to the next section of construction to be attempted.



The issue of a medal to commemorate the commencement of a railway's construction – or of its completion – was common, and not only in South America. This is one marking the start of work on the still surviving Talca to Constitución metre gauge branch of the Red Sur.

The growth of the *Red Norte*

In order to understand the complicated development of the state's northern railway network, and thus the development of the loco fleet, it is necessary to have a picture of the various sections that were eventually joined together to make a single trunk line northwards. These are listed in order from south to north, with those not forming part of the eventual longitudinal route being placed in brackets. The four sections authorised by government decree in 1888 plus the erstwhile *FC de Elqui*, which collectively used the locos listed in this section, are shown in bold to help understanding of which section was where. One section, from Rayado to Limahuida, was eventually bypassed via a new coastal route to Los Vilos, whilst plans were drawn up but not put into action for a similar bypass north from Los Vilos all the way to Coquimbo.

La Calera to Cabildo

71km, authorised 1888, contracted to the N&SACCo but presumably then continued by the *DOP*, and then by contractor Antonio Martinoly, opened 1898. Branches west to Papudo and Longotoma on the coast opened in 1910 and 1915, and another from La Ligua north to Trapiche.

Cabildo to Limahuida

102km, Howard Syndicate contract opened 1914. Branch from Pedegua to Petorca was opened in 1924.

(Los Vilos to) Illapel, Limahuida (and Salamanca)

Authorised 1888, N&SACCo contract presumably taken over by *DOP*, then Santiago Sotomayor contract, opened to Choapa 1898 but remainder not opened until several years later. Limahuida to Illapel is 25km.

Illapel to San Marcos

104km, Howard Syndicate contract opened 1914.

San Marcos to La Paloma and Ovalle

N&SACCo contract presumably taken over by *DOP*, but major part not opened until 1911. However the Ovalle end (from La Paloma onward) had been completed during the 1890s and thus was opened during that decade

(and also provided a link to the Tongoy railway at Trapiche by 1901). A branch from La Paloma eastward for 25km to Las Juntas was opened in 1916 and closed in 1953.

Ovalle (Puntilla) to Coquimbo and La Serena Opened 1862 on broad gauge, regauged to 1m between 1901 and 1910.

La Serena to Islón (and Rivadavia) Opened 1885 by *FC de Elqui*, then destroyed by flooding, taken over by state and eventually rebuilt on new alignment by contractors *Coo y Sotomayor*, who completed the work mid-1903.

Islón to Vallenar Howard Syndicate contract, opened 1914.

Vallenar (to port of Huasco) 50km, authorised 1888, N&SACCo contract taken over by *DOP*, opened 1892. In 1903 had 3 Schneider 2-8-0s and two 14 ton locos.

Vallenar to Toledo Howard Syndicate contract, opened 1914

(Caldera,) Toledo & Copiapó to Chulo, (with branches to Chañarcillo, Tres Puentes & Puquios) Opened 1852-7 on standard gauge by Copiapó Railway Co.

Chulo to Inca de Oro Southerly extension of Chañaral Railway, completed in 1908

Inca de Oro to Empalme 2 Southerly extensions of Chañaral Railway completed in 1897 and 1904

Empalme 2 to Pueblo Hundido Chañaral Railway, 3' 6" gauge, begun in 1872. Dual gauged by 1904.

Pueblo Hundido (later Diego de Almagro) to Pintados 709km, Chilean Northern contract, mainly built by MacDonald Gibbs & MacDougall, and completed in 1914

Pintados to Iquique Authorised 1914, completed 1928

Construction of the four sections authorised in 1888, of the Talca to Constitución line in the south, and of other mainly broad-gauged routes, was initially contracted to the North & South American Construction Co. of the USA. The sorry saga of this company is set out in an appendix to the sub-metric gauge locos file, but what is not yet clear is the identity of three metre gauge locos ordered for construction purposes on those lines.

The following locos were on the various isolated sections of the Longitudinal Railway pre 1902:

0-6-0T d/w 800mm 31½", cyls. 270x260?mm 10½"x10¼?", built by St. Leonard in 1891

Purchased for use on construction trains and then for secondary uses. One 1892 source says piston stroke was 350mm, as does a St. Leonard catalogue. Identifiable by front edge of cabsides dropping down into a large radius curve forward into the top line of the tanks. These locos seem to have commonly run with tenders. Weight empty 12.5 tonnes, weight in service 13.6 tonnes.

1 'TOMÁS ECHEVARRÍA' w/n 895

A locomotive no. **1**, possibly this one, was recorded as on Vallenar to Huasco construction work in 1893, as being used on service train work there, and as having covered 2,500 km in February [Boletín *DOP* 1st semester 1893 p222]. In March it had covered 468 km [p495]. In April it covered 2,284 km [p500]. In May 470 km [p619]. June 1,926 km [Boletín *DOP* 2nd semester 1893 p140]. July 2,208 km [p268].

Los Vilos to Illapel around 1899. In 1900 at Los Vilos was running with the tender from Lever Murphy 4-6-0 '**MANUEL A. MATTA**'

Dec. 1902 was to go to contractor of Choapa to Illapel.

1904 was at Los Vilos on *muelle* duties but needing general overhaul.

According to [11] was still at Los Vilos in 1912.

2 '?' w/n 896

A locomotive no. **2**, possibly this one, was recorded as on Vallenar to Huasco construction work in 1893, and to have covered 1,844 km in March [Boletín *DOP* 1st semester 1893 p495]. In April it covered 560km. [p500], In May its usage was 1,509 km [p619]. June 956 km [Boletín *DOP* 2nd semester 1893

p140]. July under repair [p268].

A locomotive no. **2**, possibly this one, was recorded as working La Calera to Cabildo construction work in 1893, and in April as having been used on ballast train work there [Boletín *DOP* 1st semester 1893 p491]. June 3,930 km [Boletín *DOP* 2nd semester 1893 p143]. July 2,630 km & Aug. 344 km [p465].

3 ‘RICARDO CUMMING’ w/n 897

A locomotive no. **3**, possibly this one, was recorded as on Vallenar to Huasco construction work in 1893, but as having been under repair during February [Boletín *DOP* 1st semester 1893 p222]. In March it covered 330 km [p495]. April covered 2,356 km. [p500], In May its usage was 190 km [p619]. June 0 km [Boletín *DOP* 2nd semester 1893 p140]. July 480 km [p268].

Previously used on the Talca line, until May 1898. [1902 *Memoria* p265], then moved to La Calera.

In March 1899 was at La Serena for the Rivadavia line reconstruction [MOBR1128].

1902 Paloma a San Marcos, or Serena a Rivadavia, the latter probably correct.

At La Serena (or possibly Catapilco) in Jan. [MOBR1394] and Feb. 1902, not in use and available for transfer elsewhere.

In use on Coquimbo system in 1905 and 1906 [MOBR3079].

4 ‘VICENTE DÁVILA LARRAÍN’ w/n 898

[MOBR1581] says explicitly that this was a St. Leonard engine.

A locomotive no. **4**, possibly this one, was recorded as on Vallenar station construction work in 1893, and as having covered 550 km in February [Boletín *DOP* 1st semester 1893 p222]. In March 1893 it covered 1,434 km [p495]. In April it was under repair [p500]. In May 2,670 km [p619]. June 2275 km [Boletín *DOP* 2nd semester 1893 p140]. July 2,460 km [p268].

A locomotive no. **4**, possibly this one, was recorded as working La Calera to Cabildo construction work in 1893, and as having operated 2,350 km. there in February [Boletín *DOP* 1893 1st semester p491].

Previously used on the Los Vilos line at least from 1897, until July 1899 [1902 *Memoria* p265] and [MOBR1140], and was using a wagon as a tender.

1902 Serena a Rivadavia, since 1899.

At La Serena in Feb. 1902, not in use and available for transfer elsewhere.

However, in Jan. 1905 accepted back from contractor to *DOP* on completion of construction work.

5 ‘DOMINGO V. SANTA MARÍA’ w/n 899

A locomotive no. **5**, possibly this one, was recorded as working La Calera to Cabildo construction work in 1893, as being used on passenger and goods train work there, and having run 4,630 km. in February [Boletín *DOP* 1893 1st semester p491]. June 5007 km, again mostly on service trains [Boletín *DOP* 2nd semester 1893 p143]. July 3,296 km & Aug. 3,482 km [p465].

From perhaps 1896 was used on construction of La Calera to Cabildo line, until February 1898. (1902 *Memoria* p265),

In March 1899 was at La Serena for the Rivadavia line reconstruction [MOBR1128].

1902 Serena a Rivadavia, since 1898.

At La Serena in Feb. 1902, not in use and available for transfer elsewhere.

To be sent to Chañaral July 1902, in good order but not needed at La Serena.

In use on Coquimbo system in 1905 and 1906 [MOBR3079].

6 ‘?’ w/n 900

The two St. Leonard locos not named above were probably:

? ‘ALMIRANTE MOLINAS’ Definitely six-coupled [MOBR1356 & MOBR1589]. Same weight as St. Leonard locos.

1900 At Talca, probably on San Clemente line construction.

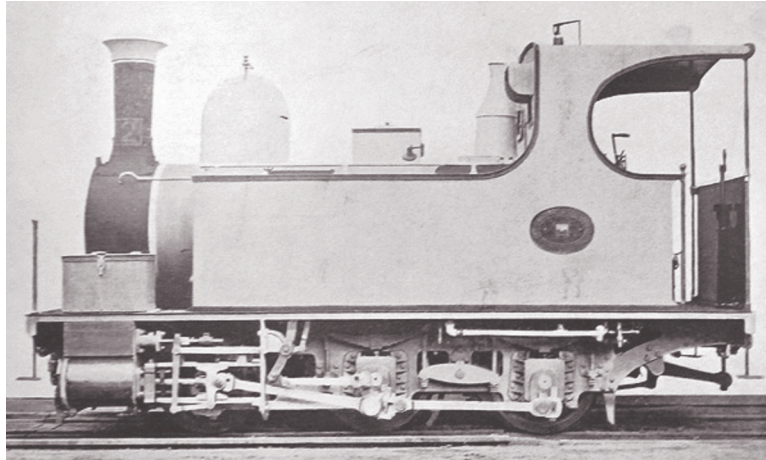
Heavy overhaul by LM in late 1900, shipped from and to Talca.

1901-3 Talca a San Clemente,

1908 was on Ovalle to Trapiche contract but in a very bad state.

1910 & 1912 Paloma a San Marcos,
1914 To *EFE* (*entregado provisorio*).

? **‘PEDRO MONTT’** Probably the last of the St. Leonard engines, and [MOBR1128] confirms this..
From perhaps 1896 was used on construction of La Calera to Cabildo line [MOBR790].
March 1899 was to be sent to La Serena for the Rivadavia line reconstruction [MOBR1128].
Was back at La Calera when that contract completed and hire terminated in 1902.



St. Leonard builders' photo of no. **2** from the P. C. Dewhurst archive, but without any name-plates.



A damaged photo of a worksplate on no. **2**, from the Dewhurst collection.

The lettering says '*Ferro-carriles del Estado*' around the top, '*Societe St. Leonard, Liege, Belgique*' around the bottom, '*No. 896*' on the left, '*1891*' on the right, and has the Chilean flag shield design in the centre.

Other small locos. The next three were probably originally owned by the N&SACCo., and were then passed to Sr. Julio Bernstein before being expropriated by the government and added to the *DOP* fleet in 1891. The remainder were probably ex *FC de Elqui*.

Unidentified small locos

? **‘La HORMIGA’** Name mean ‘The ant’. This name is rather different from the five identifiably-named St. Leonard engines, all of which were named after public figures.

Mentioned in [MOBR1580] as no more than 17 tonnes but no details given.

? **‘IGNACIO DOMEYKO’** Possibly the last of the St. Leonard engines, judging solely by the nature of its name.

June 1893 was on Calera - Cabildo construction, and had covered 679 km [*DOP Boletin* 1893 2nd semester p143].

From perhaps 1896 was used on construction of La Calera to Cabildo line [MOBR790]. Prior to this it had been overhauled at Caleta Abarca. Was still there in January 1902 [MOBR1394].

2? ‘PELÍCANA’ or ‘PELÍCANO’ Mixed traffic tank loco, 12T.

1902 Animas a Los Pozos.

Sept. 1908, request that state railways return loco to *DOP* for use on construction Inca to Chulo [MOBR2108].

2-4-0T d/w 36", cyls. 9x16", built by Neilson in 1878

14T., with "*cilindros inclinados*", ex *FC de Elqui* [Memoria 1902 and MOBR1581]. [MOBR1128] says a 2-4-0T by Neilson 1878.

14 'EI MOLLE' w/n ? Probably the *FC de Elqui* no. 4 '**LA COMPAÑIA**'. See earlier page.

In March 1899 it was at La Serena for the Rivadavia line reconstruction [MOBR1128]. Apparently it had at some point been rescued from the bed of the Río Coquimbo, presumably after a flood of some description [MOBR1128].

At La Serena in Feb. 1902, on construction trains, and June 1903 [MOBR1592].

Oct. 1904 required back from state railways by *DOP* for use on Ovalle - Trapiche line [MOBR1684].

In use on Coquimbo system in 1905 and 1906 [MOBR3079] and 1907 [MOBR1910] when the smokebox, cab, cranks, bearings, tubes, were being replaced, a patch fitted to the firebox and the frames were being straightened. The loco's running number at this time was 27.



Neilson 2-4-0T no 2381 running as *DOP* no. 14. Noteworthy points are the side buffers, possibly as used by the *FC de Elqui* or alternatively fitted temporarily by a contractor for use when working with small wooden wagons, and the tyres of the pony truck which look worn enough to be almost double flanged!

The photo is from Pablo Moraga's collection.

0-6-0T d/w 30", cyls. 9x14", built by Corpet of Paris in 1880 [MOBR1180] or possibly by Cail [MOBR1910]

Weight 15.5 tonnes [MOBR1910].

15 'MANUEL A. MATTA' w/n ? '*antigua*' '*Remolcadora*' tank loco, 10T. Note duplication of name by Lever Murphy 4-6-0.

On Los Vilos line, until October 1897. (1902 Memoria p265)

In March 1899 was at La Serena for the Rivadavia line reconstruction [MOBR1128].

At La Serena in Feb. 1902, not in use and available for transfer elsewhere.

In use on Coquimbo system in 1906 [MOBR3079].

0-4-0T d/w 28½", cyls. 7¼"x12", built by Neilson in 1872

Evidence in [MOBR1128]. [MOBR1012] says d/w 710mm and cyls. 184x330mm. *Remolcadora* tank loco, 7T. This cannot yet be found in the Neilson list.

10 or 19 or 13 'LA TETERA' w/n ? Ex *FC Elqui* No. **5 'LA TETERA'**.

In March 1899 was at La Serena for the Rivadavia line reconstruction [MOBR1128], having been found in the maestranza in Coquimbo and passed to the Elqui reconstruction contractor in Oct. 1897.

At La Serena in Feb. 1902, not in use and available for transfer elsewhere. But still there in June 1903 [MOBR1592].

However, in Jan. 1905 accepted back from contractor to *DOP* on completion of construction work.

In use on Coquimbo system in 1905 and 1906 [MOBR3079] and 1907 [MOBR1910] when an axle was being replaced.

0-4-0ST d/w ?, cyls. ?, built by Black Hawthorn in 1882

Remolcadora tank loco, 6T or 4T in another source. Known by builders' number 671. Supplied via Matthews Richards & Co. to Chile.

671 'VICTORINO A. LASTARRIA' w/n 671 Confirmed as ex *FC de Elqui* by reference in *DOP memoria* 1902 p265. This loco name confirmed as being from Black Hawthorn in 1882 by [MOBR1128].

On Ovalle a San Marcos line, until October 1897.

In March 1899 was at La Serena for the Rivadavia line reconstruction [MOBR1128].

1902 Serena a Rivadavia, since November 1897 [*DOP memoria* 1902 p265].

At La Serena in Feb. 1902, not in use and available for transfer elsewhere.

Received back from contractor on completion of contract Serena – Rivadavia in June 1903 [MOBR1592], but builder's no. quoted as 627 at that time, and said to be in poor condition out-of-service [MOBR1589].

In use on Coquimbo system in 1905 and 1906 [MOBR3079].

4-6-0 d/w 1067mm 42", cyls. 330x508mm 13"x20", built by Black Hawthorn in 1883, 1884, 1886

Adhesive 15T, total 21T, BP 140psi, for mixed traffic. BH list says cyls. were 13x19". Via Chas. Lambert & Co. of London. It is not clear why neither of the other two ex *FC de Elqui* 4-6-0s appear in any *DOP* lists.

1 'ELQUI' w/n 751 later became *EFE 3041*, see *DOP* section below.

Arrived from Iquique, April 1899. (1902 Memoria p265).

However, in March 1899 was already at La Serena for the Rivadavia line reconstruction [MOBR1128].

1902 Serena a Rivadavia. Received back from contractor on completion of contract Serena - Rivadavia in June 1903 [MOBR1592].

Oct. 1904 required back from state railways by *DOP* for use on Paloma - San Marcos line [MOBR1684].

In use on Coquimbo system in 1905 and 1906 [MOBR3079].

? 'JORJE MONTT' w/n ? Notwithstanding the fact that a Schneider 4-4-0 mentioned below was named **'JORJE MONTT'**, [MOBR1128] mentions "un antigua locomotora inglesa" with this name, a 'de mucho poder' 4-6-0 'pertenecia a la empresa de Elqui'. This suggests that one of **'ELQUI'**'s two sister engines was in use by the *DOP* in 1899 and on these engines' home railway.

4-4-0 d/w 1140mm 45", cyls. 330x406mm 13"x16", built by Schneider in 1893-4

Weight in running order 19½ tonnes. Schneider knew these locos as design 112. Three delivered to Talca – Constitución line, and two for La Calera – Cabildo. An article in *The Railroad Gazette* [Dec 27 1889], on the aftermath of the N&SACCo fiasco, implies that Schneider will get the contracts for locos for new lines; this may mean that these orders had been placed as early as that date.

8 '(PEDRO?) AMADO PISSIS' w/n 2556 On Talca-Constitucion line in 1901, but awaiting new firebox plates [MOBR1387].

9 '?' w/n 2557 Photo below shows this engine at Cabildo in 1900.

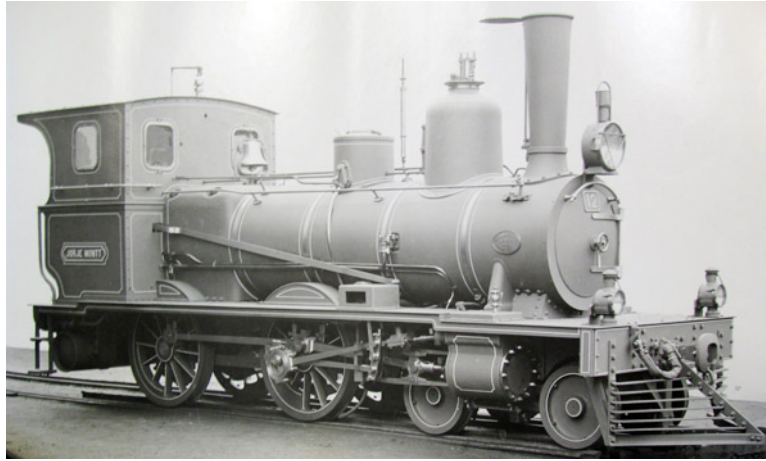
10 'IGNACIO VALDIVIA' w/n 2558 Operating on Talca-Constitucion line in 1901 [MOBR1387].

11 'ANDRES A. GORBEA' w/n 2559 Operating on Talca-Constitucion line in and 1900 and 1901

[MOBR1387].

12 'JORJE MONTT'

w/n 2560 Operating on Talca-Constitucion line in 1901 [MOBR1387].



A Schneider builder's photo of no. **12**, taken without the loco's tender.



This photo taken at Cabildo in 1900. It shows loco no. **9**, which was the only one not on the Talca-Constitución line at that time. No. **9** is the only one of the class whose name is not yet known, but the cabside plate appears to have a long first word and a short second word.

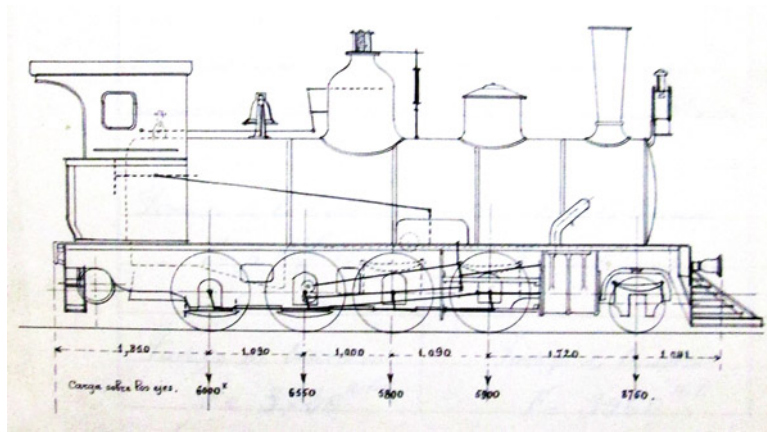


This part side view shows a name-plate that cannot quite be read but which does not seem to be any of those listed above. Thus the loco is probably no. **9**, the only one whose name remains unknown.

2-8-0 d/w 914mm 36", cyls. 370mmx450mm 14¼"x17¾, built by Schneider in 1893-4

Weight in running order 27¾ tonnes. BP 10 bar. Schneider knew these locos as design 116. Two delivered to Talca – Constitución line, one for La Calera – Cabildo, and the remaining two to Valparaiso for use at an unspecified location. There were supposedly two Schneider locos at Los Vilos in 1900, including at least one 2-8-0, though it is difficult to reconcile this information with other location details. Identifiable by the long straight running plate and low boiler, with a complex dome, safety valves and regulator linkage.

- | | | |
|-------------------------------|----------|---|
| 13 'WALDO SILVA' | w/n 2561 | This engine had been delivered to Los Vilos, but had been in use at Ovalle since 1894 on the Ovejerías Negras line works, and by 1901 was in a very bad state. The suggestion was that it should go to one of the Valparaiso loco builders for overhaul and then be shipped to the Talca-Constitucion line [MOBR1398], where several other Schneider locos were located. After overhaul at LM it was recorded as:
1902 Talca a San Clemente,
In August 1905 the <i>DOP</i> were asking when the Ovalle to Trapiche contractor needed this loco.
1910 & 1912 Paloma a San Marcos
1914 To <i>EFE</i> ' <i>entregado provisionario</i> ' |
| 14 'RAMÓN BARROS LUCO' | w/n 2562 | On Talca-Constitucion line in 1901 but too heavy for the temporary bridges so not in use [MOBR1387]. Reportedly still there in 1911 [MOBR2304]. |
| 15 'JENERAL del CANTO' | w/n 2563 | Delivered to Huasco to Vallenar line, and was still there in 1911 when a new boiler was to be ordered [MOBR2304]. |
| 16 'JENERAL URRUTIA' | w/n 2564 | Delivered to Huasco to Vallenar line, and was still there in 1911 when a new boiler was to be ordered [MOBR2304]. |
| 17 'JENERAL KORNER' | w/n 2565 | Delivered to Huasco to Vallenar line, and was still there in 1911 when a new boiler was to be ordered [MOBR2304]. |



Sketch diagram found in file at ArNAd.



A Schneider builder's photo of no. **16**, taken without the loco's tender.

2-4-0 d/w 1250mm 49¼", cyls. 356x457mm 14"x18", built by Rogers in 1897

Delivered via W.R. Grace, Rogers order number J-1554 1. Special features: rocking grates, Stevens piston packing, tubes #10 and #12 thick.

18 'PALOS QUEMADOS'

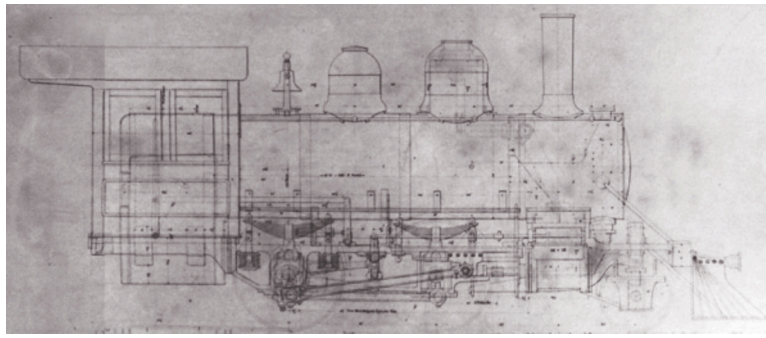
w/n 5189

Later converted to 2-4-2.

In March 1899 was recorded as having recently arrived at La Serena from Huasco but only for repair and then return.



High resolution versions of this image are available from ALCo
Historic Photos at <http://www.alcohistoricphotos.com/>

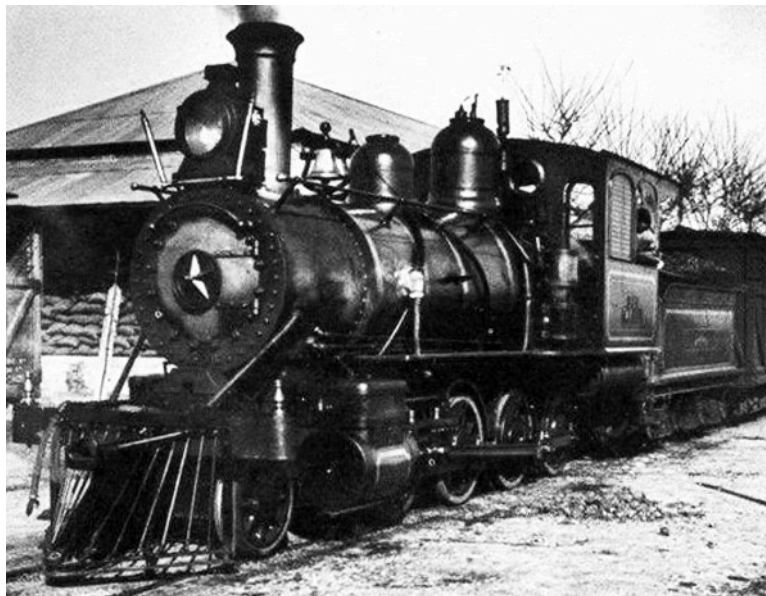


An extract from an inverted Rogers blueprint photostat in the P. C. Dewhurst collection at the NRM in York.

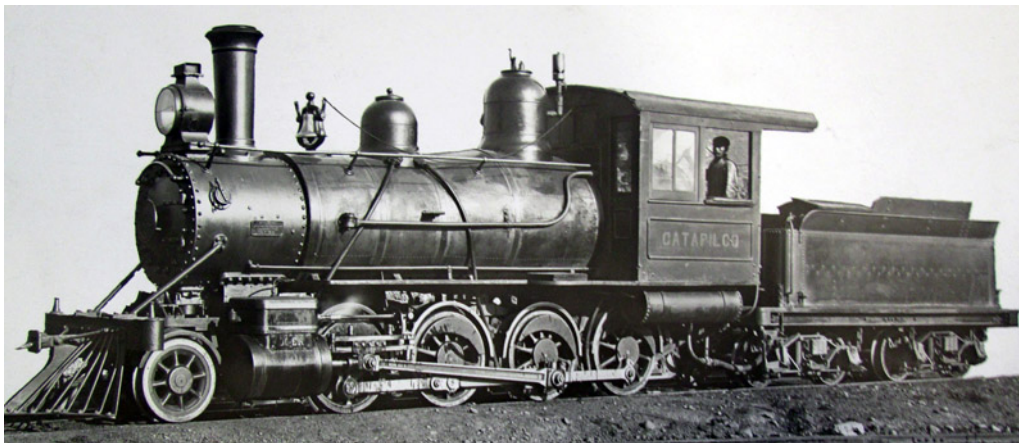
2-8-0 d/w 991mm 39", cyls. 406x457mm 16"x18", built by Rogers in 1897

Batch delivered via W. R. Grace, traditional cab roof & rounded tops to cab windows, narrow running board with air tank above it on right hand side, eight spoke pony truck wheels. Flattish curve to top of dome.

19 'CATAPILCO'	w/n 5190	First used Calera - Cabildo section [11].
20 'LA LIGUA'	w/n 5191	First used Calera - Cabildo section [11].
21 'LOS VILOS'	w/n 5192	First used on Los Vilos railway [11], and was there in 1900, known then as ' LADISLAO ERRÁZURIZ '. Also known by that name at Los Vilos in 1903 and 1904. Received a general overhaul in 1904.
22 'CAVILOLÉN'	w/n 5193	First used on Los Vilos railway [11], and was there in 1900 and in August 1901 [MOBR1379]. In use by <i>DOP</i> for some years eg. 1902 Choapa a Illapel, 1910 Choapa a Salamanca, recorded inaccurately as a 2-6-0 in 1912, 1914 & 1914 to <i>EFE entregado provisorio</i> , on Choapa to Salamanca line works in 1930 [1], and in 1930 <i>memoria</i> recorded as on loan to <i>EFE</i> since 1911.



A loco from this first batch of Rogers 2-8-0s at Nogales near La Calera.



No. 19 'CATAPILCO' in almost original condition but with a slightly different cab, without the curved tops to the windows that were standard on this batch.

4-6-0 d/w 1219mm 48", cyls. 406mmx559mm 16"x22", built by Lever Murphy in 1899/1900, 'Pasajero, con tender'

4-6-0 d/w 1016mm 40", cyls. 406x457mm 16"x18", built by Lever Murphy in 1899/1900, 'Carga, con tender'

There were five of each of these types, built by LM but as part of a joint bid by LM, BL and Hardie & Co. for rolling stock as well as locos. Delivery was intended to be two of each type to Los Vilos and three of each type to La Calera, but in the event two went to Los Vilos, three to La Serena and five to La Calera. There was a big fuss about defects in quality when these locos were delivered [MOBR1224]. The two types of loco had a very similar generally American look, with wrap-over cab roofs, rounded cab window corners, a Baldwin style dome over the firebox and a sand-dome further forward, six-wheel tenders, and British-style smokebox door darts. However, there were important differences: the boilers had the same outside diameter but the passenger engines were 10 inches longer between the tube plates. The coupled wheelbases were the same but again the passenger engines were longer at the front end. Cylinder diameters were identical at 16" (406mm) but the strokes differed at 18" (goods locos) and 22" (passenger locos). The tenders were identical, as were other details, and it seems unlikely that one could tell the two variants apart from a single photograph unless a close examination of the boiler bands reveals a clear difference in length. The following names and early numbers have been noted from a variety of sources:

'Carga, con tender'.

23 'FEDERICO ERRÁZURIZ E.'

Arrived new from Lever Murphy to the DOP, December 1899.

1902 Serena a Rivadavia probably since new, and at that date in use on service trains. Received back from contractor on completion of contract Serena - Rivadavia in June 1903 [MOBR1592]. Also quoted as having number **18** at some point.

In use on Coquimbo system in 1905 and 1906 [MOBR3079].

Correspondence in [MOBR2217] suggests that in 1909 this engine (though numbered **20** in the letters) was shipped from Coquimbo to Arica for use during the construction of the FCALP. As a loco with the number **23** and name '**FEDERICO ERRÁZURIZ**' was recorded lying derelict in Arica in 1955, we can probably assume that it remained there for the rest of its life.

24 '?'

Delivered to La Calera in 1899.

25 '?'

Delivered to La Calera in 1899.

26 'JUAN M. SIMPSON'

Arrived new from Lever Murphy to the DOP, December 1899.

Delivered to La Serena. On service trains there in 1902. Received back from contractor on completion of contract Serena - Rivadavia in June 1903 [MOBR1592]. Also quoted at times as having numbers

19 and 24.

In use on Coquimbo system in 1905 and 1906 [MOBR3079] and 1907 [MOBR1910] when a tubeplate was being replaced, and new tubes and stays fitted. The running number was **21** at that time. Delivered to Los Vilos in 1899. Also quoted as having numbers **24** or **21**.

27 'VALENTÍN MARTÍNEZ'

The following two names also belonged to Lever Murphy 4-6-0s, supposedly of the goods variety though one of the names might have been on one of the passenger locos below.

'ARTURO ALESSANDRI'

1902 Pueblo Hundido a Inca,
1906 Animas a Los Pozos.

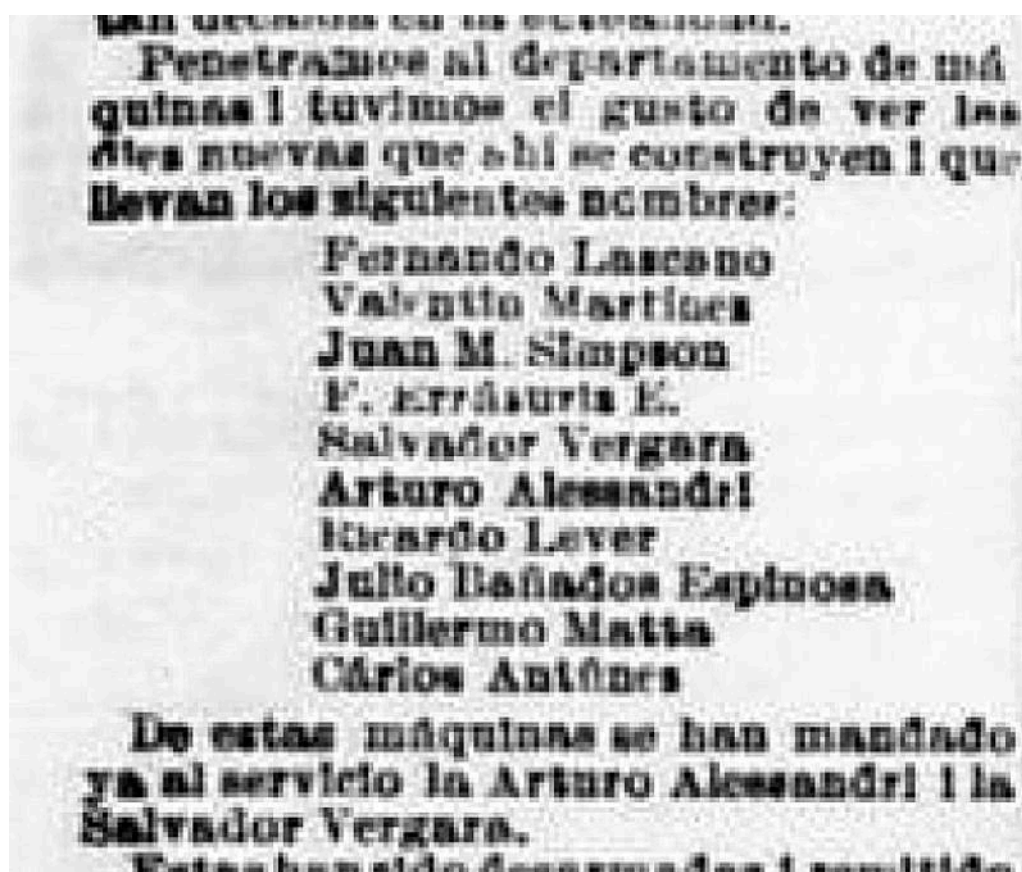
'MANUEL A. MATTA' [14].

Numbered **21** or **25** at some point. Note duplication of name originally given to small tank loco.

A recent document, source [57], gives a slightly different combination of numbers and names, though where these were found is unknown:

"Hasta muy entrado el siglo pasado, las máquinas ferroviarias de trocha angosta (de La Serena a Elqui) ostentaron en brillantes planchas de bronce su número de orden y el nombre de un personaje ilustre. Así fue el caso de la locomotora N° 23, Federico Errázuriz; la locomotora N° 24, Juan M. Simpson; La locomotora N° 25 Manuel A. Matta; la locomotora N° 26, Julio Bañados Espinoza; y la locomotora N° 27, Fernando Lazcano."

Sr. Andrés Thompson C., has written in 2022 flagging up the issue of *El Sur*, published in Concepción on 25th June 1899, which reports on a recent visit to Lever Murphy at Caleta Abarca and gives a list of names of the ten new locomotives, though unfortunately not in order or with their running numbers:



Of these ten, only two have not been mentioned already:

'**SALVADOR VERGARA**' and '**CARLOS ANTÚNES**'.

Note also that '**MANUEL A. MATTA**'. mentioned above, does not appear here.

'*Pasajero, con tender*'.

28 ‘?’

29 ‘JULIO BAÑADOS ESPINOZA’ [14].

Delivered to La Calera in 1899. Also quoted as having number **8**.
Delivered to La Calera in 1899. Also quoted as having number **9**,
and numbered **10** or **26** at some point. In Nov. 1903 was at Serena -
Rivadavia numbered **29**. This loco overturned down a 15m
embankment near Pelicano on the Elqui line in January 1907 whilst
hauling a special passenger train back from Rivadavia. Whilst no-
one was killed, the driver, fireman and a footplate passenger were
badly scalded. It had to be dismantled in order to be rescued, but this
was delayed by the land-owner who refused to permit access until a
minor tax dispute with the government had been settled! [*Sucesos*
issue 252] Night trains on the Elqui line were suspended after this
incident, the poor state of the track, and a lack of traffic, making
them unnecessary and inadvisable.

In use on Coquimbo system in 1905 and 1906 [MOBR3079] but not
in the 1907 list perhaps as a result of the accident mentioned above.

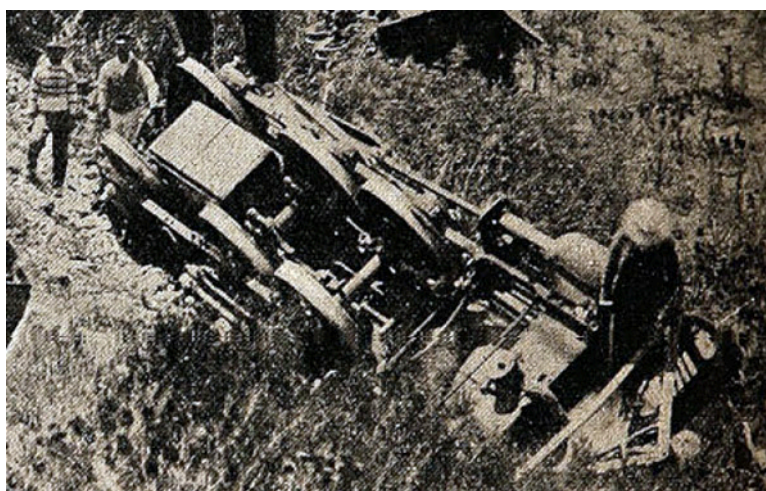


Photo of no. **29** after the accident, from *Sucesos* issue 252. See paragraph above.

30 ‘?’

31 ‘GUILLERMO MATTA’

Delivered to La Calera in 1899.

Arrived new from Lever Murphy to the *DOP*, December 1899.

1902 Serena a Rivadavia since new, and on service trains there early
1902. Derailed 6th Jan. 1902 on pass. train, at Yungay (where? not
the one in Nuble province presumably) but damage fairly superficial
[MOBR1495]. Another derailment 12th April 1903 at Km 6 when
returning from Vicuña to La Serena, hit an obstacle at low speed and
rolled down a low embankment. Received back from contractor on
completion of contract Serena-Rivadavia in June 1903 [MOBR1592].
In use on Coquimbo system in 1905 and 1906 [MOBR3079].

32 ‘FERNANDO LAZCANO’

Delivered to Los Vilos in 1899, but not used owing to long
rigid wheelbase. Proposal in 1901 was to send to Serena a Rivadavia
where there were similar locos, but not there in early 1902. By 1903
had been transferred there [MOBR1581] but construction work ended
around June 1903 [MOBR1589]. October 1904 was handed
over to state railways for Serena - Rivadavia trains until needed again
by *DOP*. Also quoted with numbers **11** and **27**.

In use on Coquimbo system in 1905 and 1906 [MOBR3079] and
1907 [MOBR1910] when a new driving wheel axle was being fitted.

One of the two un-named locos above will have been:

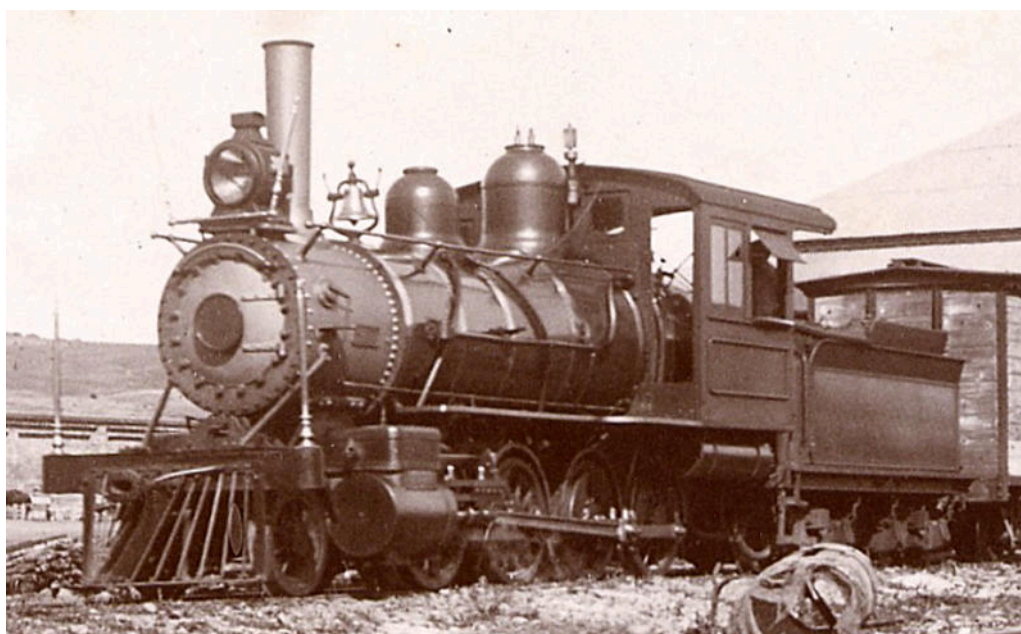
? **‘RICARDO LEVER’**

1902 Pueblo Hundido a Inca. Señor Richard Lever was the principal partner in Lever Murphy & Co. the manufacturers of the loco, and Señor Ricardo Lever Caceres was presumably one of his sons.

2-8-0 d/w 991mm 39", cyls. 406x457mm 16"x18", built by Rogers in 1900

All six embarked New York February 1901 on SS *Cumbal*, majority to Valparaiso but one for onward transit to Los Vilos. 2nd batch, to be delivered to ‘State Railway of Chile’, rounded edges to cab roof and flat tops to cabside windows, full width running boards and all air tanks below. Nine spoke pony truck wheels. Purchase price £2,620 Sterling each.

33 ‘INCA’	w/n 5647	First used on Chañaral railway, but on Los Vilos line in 1912 [11].
34 ‘PUEBLO HUNDIDO’	w/n 5648	First used on Chañaral railway [11].
35 ‘CHAÑARAL’	w/n 5649	First used on Chañaral railway [11].
36 ‘ATACAMA’	w/n 5650	First used on Chañaral railway [11].
37 ‘OVALLE’	w/n 5651	First used on Coquimbo railway [11].
38 ‘LA PALOMA’	w/n 5652	First used on Coquimbo railway [11].



A second batch *tipo R* loco at La Ligua, date unknown.

Other loco names probably attached to metre gauge engines included:

‘BENJAMÍN CESPEDÉS’

‘JOSÉ M. URETA’ (Sr. Ureta had been Superintendent of the *FCS* from 1862, and ‘*Delegado de la Junta*’ from 1863.)

‘FLORENCIO VALDÉZ’ (Sr. Florencio Valdéz Lecaros worked for the state-owned railways from 1882, rising to become *Director de Esplotacion* from 1894 until his death in 1903.)

‘CARLOS ANTUNEZ’ – loco allocated to Chañaral around 1908.

3 ‘ANIMAS’ – allocated to Chañaral at some point.

As yet none of these have been positively identified.

3.1.3 *El FC Longitudinal Chileno* or the Chilean longitudinal Railway, sometimes referred to as the *Longitudinal Sección Sur* and officially as the *Red Central Norte* or *RCN*.

Background

Surveys were first carried out by German and Belgian firms from 1907-1908. A group of British businessmen formed a syndicate under the leadership of Lord Howard de Walden, thus ‘the Howard Syndicate’ by name, and won the contract to join the various separate existing sections of railway as far as Copiapó, with a view to creating a state-owned metre gauge line all the way through from La Calera to Pueblo Hundido. The principal civil engineering contractor on the project was Norton, Griffiths & Co. The French company *La Regie Générale de Chemins de Fer et Travaux Publics* was contractor for the construction between Papudo and Copiapó around 1910-14.

Proposed loco fleet

The original proposals for locos to be purchased for the long-term operation of these lines included:

- 7 Esslingen rack engines
- 9 Hunslet tank locos
- 6 passenger moguls
- 6 goods moguls
- 6 Mallet compound goods locos, which were to have been similar to those built for the *FCALP*.
- 4 shunting locos

As ever, plans changed. By March 1911 the list of engines to be obtained had changed to:

- 6 ‘*Cremallera*’ or rack
- 9 Hunslet ‘*con tender separado*’
- 16 Moguls
- 4 ‘*Remolcadora*’ or shunting

As was written as a heading to a table in 1913: “*Distribucion y precios por unidad del equipo que el Sindicato Howard Limitado deberia proveer a juicio de la Direccion de Obras Publicas, en conformidad al contrato*” or “Distribution and price per unit of the equipment that the Sindicato Howard should provide (at the request of?) the Directorate of Public Works, in accordance to the contract.” [MOBR2411].

However, the Howard Syndicate was offered three almost new O&K moguls from the *DOP*'s 1910 batch of six. These were lying at Cabillo with no work to do, and were thus purchased for the new task (*decreto* 2563 of 7 Dec. 1910 [MOBR2411]), only to be sold back to the *DOP* after the completion of the work.

0-6-4T d/w 864mm 34", cyls. 381mmx457mm 15"x18", built by Hunslet in 1910 (first 9) and 1912 (last 1)

Batch ordered for Howard Syndicate construction work by Griffiths & Co. on Longitudinal railway sections [11]. Used initially by Griffiths & Co., and then transferred to the state with the rest of the assets on completion of the work. *DOP* correspondence refers repeatedly to nine of these being ordered, rather than ten [MOBR2335], but ten seem to have arrived.

1 w/n 1040

2 w/n 1044

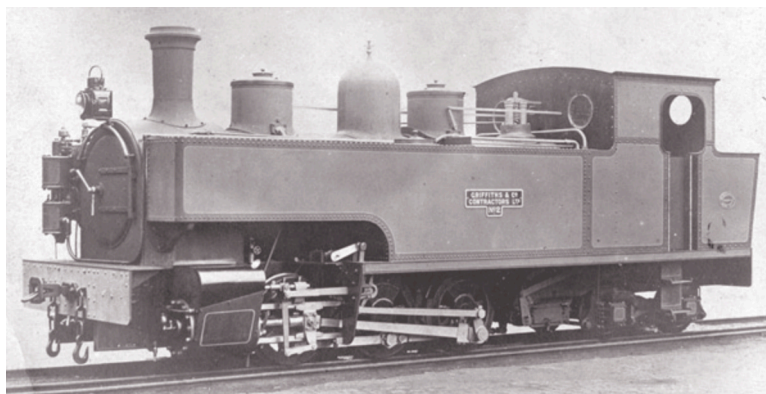
NB Brian Rumary's Hunslet list shows this as an 0-4-0T, but Hunslet builder's photos confirms that it was an 0-6-4T and with the tank side plates showing ‘**GRIFFITHS & Co. CONTRACTORS Ltd. No. 2**’.

3 w/n 1047

4 w/n 1048

- | | |
|----|----------|
| 5 | w/n 1049 |
| 6 | w/n 1050 |
| 7 | w/n 1057 |
| 8 | w/n 1058 |
| 9 | w/n 1059 |
| 10 | w/n 1064 |

In April 1913 one was (to be?) working between Cabildo & Limahuida, four between Illapel & San Marcos, and five between Vallenar & Toledo [MOBR2411].



Hunslet builder's pic of no. **2**, via archive at Staffold Barn Farm.

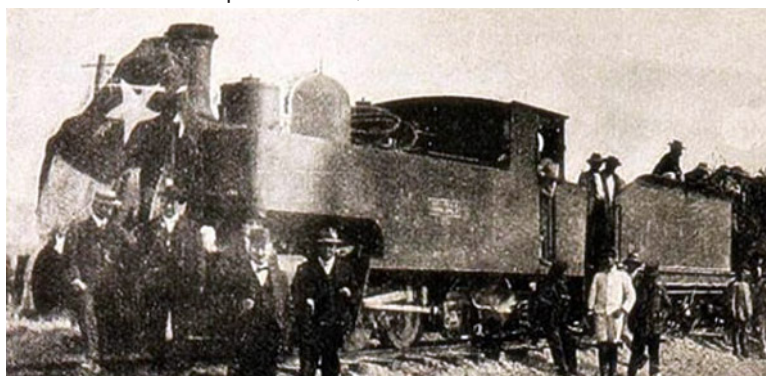


Photo from the magazine *Sucesos*, showing one of these locos running with an FCAB-lettered tender at the opening to Km 59 in 1911. The tender has the front slope characteristic of those supplied with Hunslet and Hudswell Clarke 2-8-2s numbers **75-78** and **139-140**. The former had very short lives with the FCAB and it is quite possible that one or more of their tenders was placed on metre gauge bogies and hired to the *Longitudinal Sur* contractors for use in this way.



One of the RCN Hunslet 0-6-4Ts, but strangely numbered very clearly as **25**.

2-6-0 d/w 1080mm 42½", cyls. 410mmx560mm, built by Henschel in 1912

Batches ordered for Griffiths & Co. use during Howard Syndicate construction work on Longitudinal railway [11]. NBL records suggest that they too tendered for the construction of these locos, and indeed that a Chilean Government enquiry for metre gauge 2-6-0s had been received as early as 1907. Henschel 10702-5 2-6-0s were also delivered to 'Chilian Longitudinal Bahn' at same time as locos below. Those went to *FC del Norte de Chile*, as did Henschels 10969-80. See below. The guess must be that this batch of engines were originally numbered consecutively between 11 and 20.

11	w/n 10706
12	w/n 10707
13	w/n 10708
14	w/n 10709
15	w/n 10710
16	w/n 11080
17	w/n 11081
18	w/n 11082
19	w/n 11083
20	w/n 11084

In April 1913 one was (to be?) working between Illapel & San Marcos, five north from Isilon, and four south from Valenar [MOBR2411].

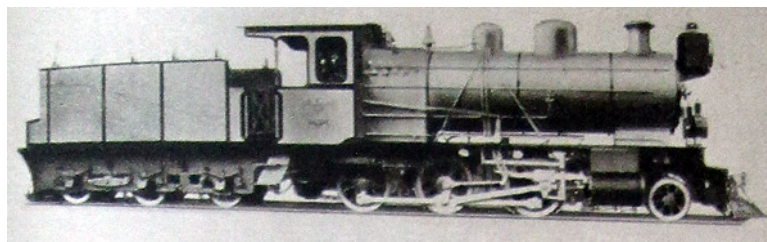


Photo from Henschel catalogue.

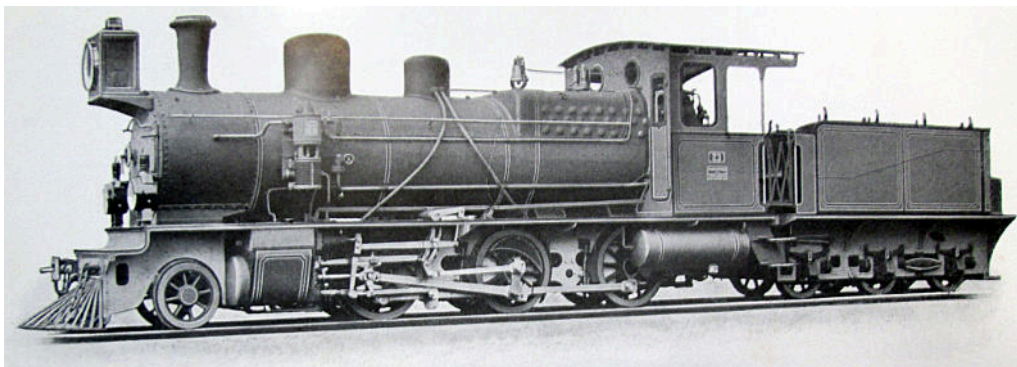
2-6-0 d/w ?, cyls. ?, built by O&K in 1910

550HP 43.2/42.2/36T delivered to *DOP* bearing nos. 21-26, which seems to indicate that they were to be in this number series. Three of them were found to be temporarily surplus to requirements and were sold to the Howard Syndicate for their own use on the construction of the *Lonj. Seccion Sur* [MOBR2307], and were presumably then sold back to the state on the completion of the work. A *DOP memoria* gives the locations of 23-25 as "1910 Longitudinal Seccion Sur", whilst the others were elsewhere, so presumably those were the locos concerned. In April 1913 one was (to be?) working between Cabildo & Limahuida, and two between Illapel & San Marcos [MOBR2411].

21	w/n 3971	Working for <i>DOP</i> during 1910. In 1911 hired to Howard Syndicate, then loaned to <i>EFE</i> during 1912 and 1914, before going to the <i>FCIP</i> where was recorded in 1930.
22	w/n 3972	Working for <i>DOP</i> during 1910, 1911, 1912 and 1914. See <i>DOP</i> list below. Later renumbered 61 and working on <i>FCIP</i> construction [MOBR2972].
23	w/n 3973	Almost certainly sold to the Howard Syndicate soon after arrival, and then bought back by the <i>DOP</i> in 1914.
24	w/n 3974	Almost certainly sold to the Howard Syndicate soon after arrival, and then bought back by the <i>DOP</i> in 1914.
25	w/n 3975	Almost certainly sold to the Howard Syndicate soon after arrival, and then bought back by the <i>DOP</i> in 1914.
26	w/n 3976	Working for <i>DOP</i> during 1910, 1912 and 1914. See <i>DOP</i> list below. Later

renumbered **60** and working on *FCIP* construction [MOBR2972].

The 1919 *EFE* list shows three O&K 2-6-0s numbered **62-64**, though having previously been **65, 63** and **64**. The suspicion must be that the above-mentioned Howard Syndicate locos became these three.



No. **23** as seen in an O&K publicity photo.

0-4-4-4-0 Three truck Shays d/w 36", cyls 12"x15", gear ratio 2.25, built by Lima in 1910

1300HP, 70T. Class C 70-3 coal burning, empty weight 117,936lb. Running numbers **27-9** acc. to Lima list. 1920 one of these to *EFE* (*etregado provisorio*).

27 w/n 2289 1910 working on *Longitudinal Seccion Sur*.

28 w/n 2290 1910 working on *Longitudinal Seccion Sur*.

29 w/n 2291 1910 working on *Longitudinal Seccion Sur*.

NB These locos not recorded in Howard Syndicate list from 1913, so may have been regarded as being *DOP* locos rather than their own.

0-8z2-2T d/w 940mm 37", cyls. 480x500mm, built by Esslingen in 1911 (3301-4), and 1913 (3305-6)

Ordered during Howard Syndicate construction work on Longitudinal railway [11].

1 'IGNACIO DOMEYKO'? **31** w/n 3606 Ran 9,800 km. in 1915, 18,827km. in 1916 and 10,055km. in 1917 [33]. Was on Palquico to Socavón in 1919 [5].

2 'RAMÓN BARROS LUCO' **32** w/n 3607 Ran 14,156 km. in 1915, 5,740km. in 1916 and 19,290km. in 1917 [33]. Was on Palquico to Socavón in 1919 [5]. Early photos show two versions of lined-out livery with initials *RCN* ('*Red Central Norte*') on tanks.

3 'ELÍAS FERNÁNDEZ ALBANO' **33** w/n 3608 Ran 10,352 km. in 1915, 24,680km. in 1916 and 14,667km. in 1917 [33]. Was on Palquico to Socavón in 1919 [5]. No. This loco was named after the Chilean acting-President from August 1910 until his death three weeks later [Photo in *Sucesos* issue 714].

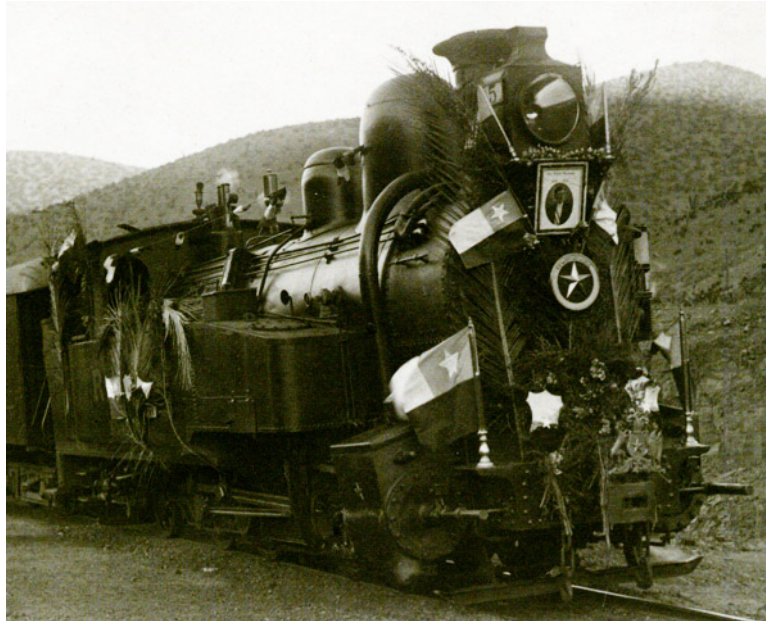
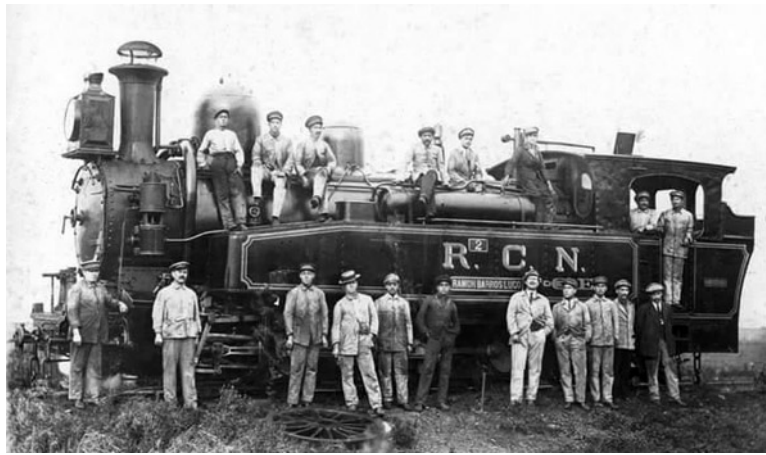
4 '?' **34** w/n 3609 Ran 10,281km. in 1915, 19,196km. in 1916 and 14,203km. in 1917 [33]. Was on Matancillas to Pama in 1919 [5].

5 'JUAN LUIS SANFUENTES' **35** w/n 3666 Ran 15,719km. in 1915, 13,036km. in 1916 and 29,324km. in 1917 [33]. Was on Matancillas to Pama in 1919 [5].

6 '?' **36** w/n 3667 Ran 0km. in 1915, 10,118km. in 1916 and 29,268km. in 1917 [33]. Was on Matancillas to Pama in 1919 [5].

One of the Esslingen 0-8z2-2Ts, probably here but possibly on the *FCALP*, was named '**PEDRO MONTT**' as illustrated in an Esslingen GA drawing.

In 1913 there were three (to be?) working between Cabildo & Limahuida and the remaining three between Illapel & San Marcos [MOBR2411], which matches the 1919 allocations shown above.



Esslingen no. 5, probably on Matancillas to Pama section, dressed up for a fiesta Patria?

0-6-0T d/w 39", cyls. 13"x20", built by Yorkshire in 1898

See the *FCTC* and *FC de Quintero* sections (3.1.6 and 3.3.5) for more detail on this loco. However, Tony Vernon's history of the Yorkshire Engine Company suggests that one of a pair of these two 0-6-0Ts, originally ordered by the British Government's War Office, eventually ended up on the *FC Lonjitudinal*, presumably after the closure of the Quintero metre gauge route. He gives no sources for this suggestion, and it is contradicted by others who say that the loco went to the Santa Fé Land Co. in northern Argentina.

?

w/n 554

Mallets not built?

The Howard Syndicate contract also specified the supply of four Mallet locos, similar to those ordered for the *FCALP*. The 1913 table states that these were (to be?) used between Serena and Copiapó [MOBR2411]. Although the table referred to was set out as if the locos and other equipment were already in use, it is more likely that it showed where the various items were expected to be used. The Mallets may in fact never have been ordered. However, [30] cites Wiener's 1930 book on articulated locomotives as saying that metre gauge 2-6-6-2 Mallets were to have been purchased by the Chilean State Railways in 1913, and that these would have been similar to locos supplied by Alco and Henschel to Brazil with the exception of added superheating. Dimensions d/w 42", and cyls. 16x20" and 25.5x20" were given.

Several years later, in August 1920, the *DOP* was specifying the maximum prices to be offered for a batch of varied new broad and metre gauge locos including "Una locomotora Mallet para 1 metro, 30 mil libras, CIF Coquimbo en 10 meses" [MOBR3076]. [11] suggests that tenders for its supply were invited and Baldwin's offer selected, but that

the necessary overseas loan was not forthcoming and so the scheme was dropped. Adding to the confusion, source [24] states that \$420,000 was to be invested in Mallet locos in 1918, with the same amount to be spent in 1921. This compares to the \$480,000 spent on rack locos in 1917, which presumably means the purchase of the three Baldwin 2-8-2zTs *tipo V* that became *EFE 3307-9*.

A Baldwin side elevation drawing in the collection at the DeGolyer Library at Southern Methodist University seemingly shows a 2-6-6-2 Mallet design for the *EFE* worked up in 1922 and for a total of six locomotives. This has not been seen by the present author.

Shunting locos?

Finally, there were (to be?) four 22 ton shunting locos. In 1913 one would have been allocated between Cabildo & Limahuida, one between Illapel & San Marcos, and the remaining two between Serena & Copiapó [MOBR2411].

Rack locos from the *FCALP*?

On 2nd February 1927 \$200,000 (pesos) were to be paid to the *FCALP* for two rack locos sold to the *EFE* for use between Pedegua and Petorca. “*Declarase de abono al Ferrocarril de Arica a La Paz la suma de doscientos mil pesos, saldo que segun el Decreto, de 18 de octubre del ano 1926, debe pagarse a dicho Ferrocarril por dos locomotoras de cremallera adquiridas por la Empresa de los FFCC del Estado.*

La referida suma se considerara como valor del equipo que el gobierno debe entregar a dicha Empresa para la explotacion fel FC de Pedegua a Petorca, de acuerdo con el Decreto-Ley organico de los FFCC del Estado.”

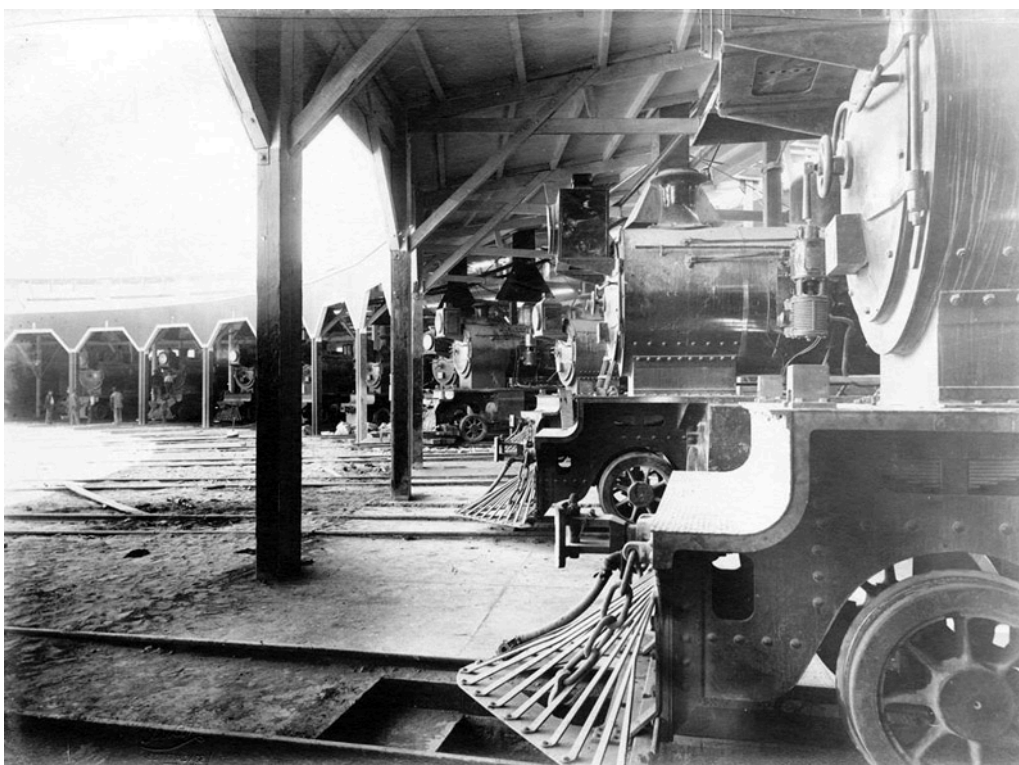
[MOBR2248]

**3.1.4 *El FC del Norte de Chile* – The Chilean Northern Railway,
sometimes referred to as the *Lonjitudinal Norte*,
or more formally as the *Ferrocarril Longitudinal de Chile Sección Norte***



Background

1000mm gauge. Pueblo Hundido to Pintados. The northern half of the longitudinal railway project. Built for the Chilean government 1910-14 by the Chilean Northern Railway Company of London, using as principal contractor the company MacDonald, Gibbs & MacDougall Chile. From 1919 it was operated by the *FCAB*, until 1961 when the route was incorporated into the *EFE*. It seems likely that government-owned locos on this railway were re-numbered in the 1000 series at the same time that metre and 60cm gauge engines further south went into the 3000, 4000, and 5000 series.



Baquedano roundhouse full of new German-built 2-6-0s in 1914 as the *FCNC* was being completed. High resolution versions of this photo may be available from the Newton Abbot Railway Studies Collection at <http://newtonabbotrailwaystudies.co.uk>

Orig.	Later
no.	no.

0-6-4T d/w 863mm 34", cyls. 381x457mm 15"x18", built by Hunslet in 1911

Acquired from the contractor, MacDonald, Gibbs & MacDougall Chile. NB These were built at the same time as those for the Longitudinal railway (ie. the *Lonj. Sección Sur*), and may have been identical, but were ordered separately. One of them became *EFE 3031*, following on from the *EFE*'s own batch of Hunslet 0-6-4Ts at **3021-30**. Purchase approved by decree of 28 January 1911. All four present at reception of line by *DOP* in 1913 [MOBR2641] and in 1920 list [MFOM1383].

1 'ANITA'	901 w/n 1062	Had arrived by Oct. 1911 [MOBR2410].
2 'FREDA'	902 w/n 1063	Had arrived by Oct. 1911 [MOBR2410]. On <i>FCIPH</i> in 1961.
3 'MARÍA'	903 w/n 1065	Transferred to <i>FCIP</i> by decree of 11 November 1935 [MFOM1393]. Became <i>EFE 3060</i> .
4 'EDITH'	904 w/n 1078	Transferred to <i>FCIP</i> by decree of 11 November 1935 [MFOM1393]. Became <i>EFE 3061</i> ? HT says this was Hunslet 1076.

Some were later fitted with tenders.

2-6-0 d/w 1080mm 42½", cyls. 410x560mm, built by Henschel in 1911

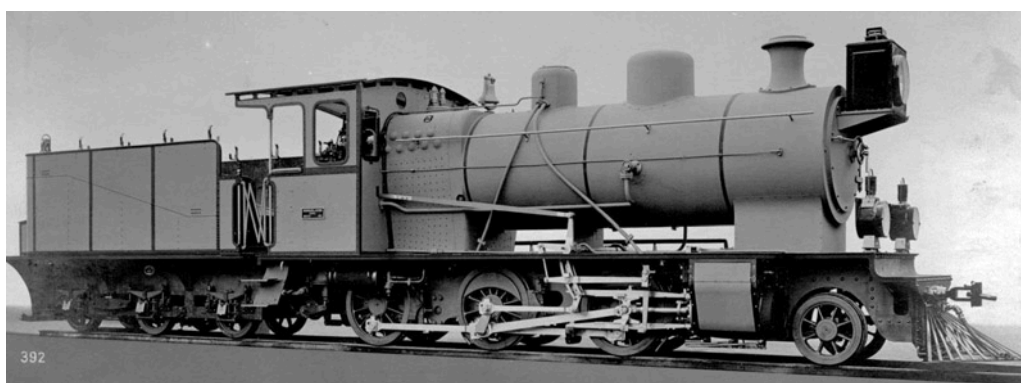
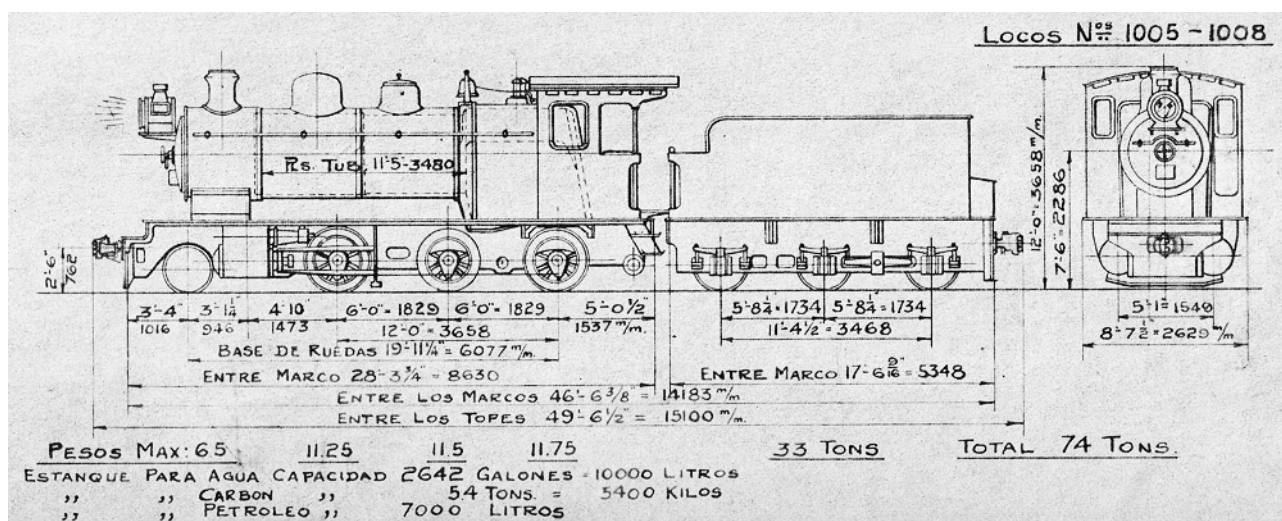
Delivered originally to '*Chilian Longitudinal Bahn*'. Names were found in [MOBR2410]. All four present at reception of line by *DOP* in 1913, and in 1920 list [MFOM1383]. Running nos. and works nos. specifically matched up in [MOBR2641]. Distinguishable in early pics from the following batch, below, by having a running plate continuing straight back under the cab and by having only two sand-pipes down from the sand-dome.

5 'QUETA'	1005 w/n 10702	Transferred to <i>FCIP</i> by decree of 22 January 1937 [MFOM1383].
6 'DOÑA INÉS'	1006 w/n 10703	Transferred to <i>FCIP</i> by decree of 22 January 1937 [MFOM1383]. Possibly named after Doña Inés Echevarría de Larraín, known as Iris, who was a pioneer female novelist and feminist in Chile.

7 'PEDRO de VALDIVIA' 1007 w/n 10704 Transferred to *FCIP* by decree of 11 November 1935 [MFOM1383].

8 'DIEGO de ALMAGRO' 1008 w/n 10705 Transferred to *FCIP* by decree of 11 November 1935 [MFOM1383].

The above were almost certainly identical to the *grupo 19 tipo Q* Henschels listed below in the 1921 *EFE* list.

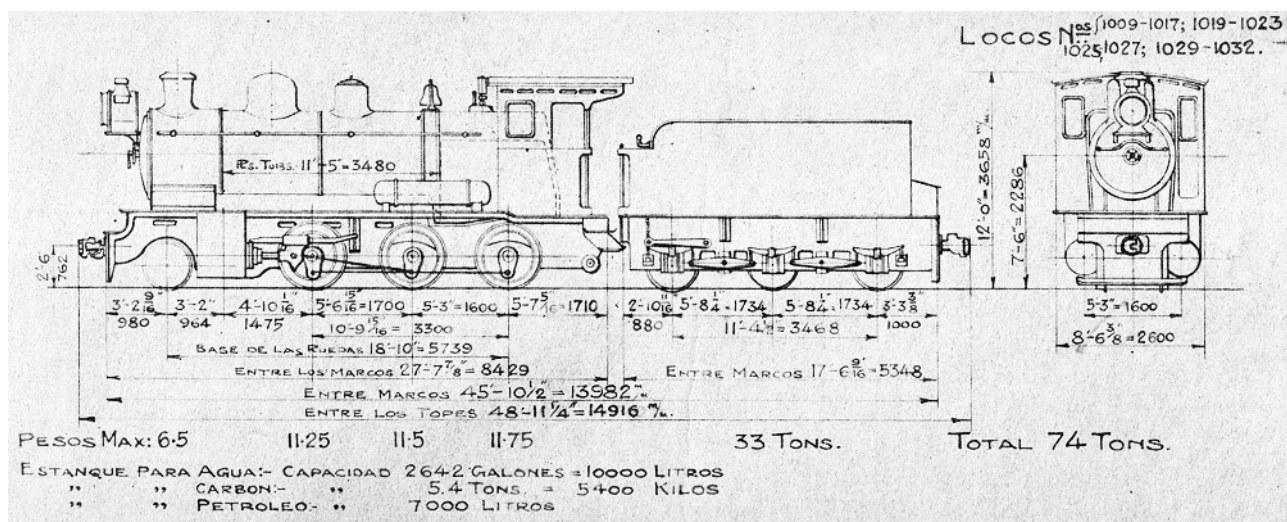


Later Grupo 23, and eventually a few became part of *tipo Q* [5]

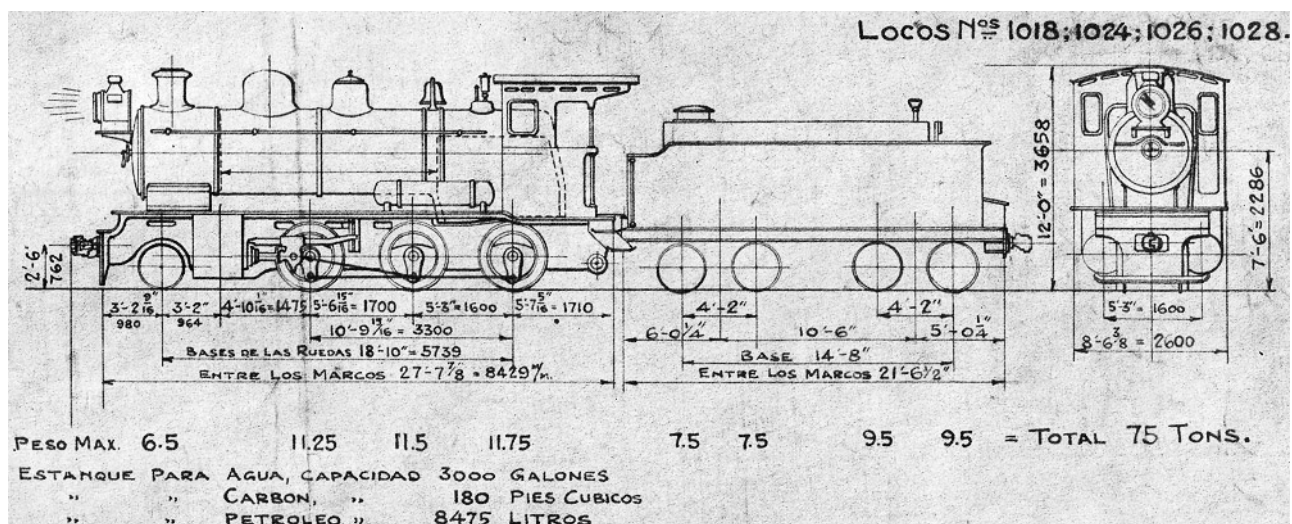
2-6-0 d/w 1105mm 43 1/2", cyls. 450x600mm, built by Henschel in 1911

Ordered for use by MacDonald Gibbs & MacDougall, the contractors on this route. The 1920 *EFE Boletin* volume says these locos had been assembled in October 1911. All twelve probably present at reception of line by *DOP* in 1913, though list of locos and repairs in [MOBR2641] mentions no. 16 w/n 10976 twice whilst missing out no. 17. The 1919 list shows only five of these, but states they were of 35.5T rather than the 33.5T of the *grupo 19 tipo Q* Henschels. Distinguishable in early pics from the class above by the running plate being slightly higher and with a small S-curve down under the cab; also by having four sand-pipes down from the sand-dome. All present in 1920 list [MFOM1383]. Running nos. and works nos. explicitly matched up in [MOBR2641].

9 '?'	1009 w/n 10969	To <i>EFE</i> on loan as their 98 [5]. On <i>FCIPH</i> in 1961.
10 '?'	1010 w/n 10970	To <i>EFE</i> on loan as their 99
11 '21 de MAYO'	1011 w/n 10971	Transferred to <i>FCIP</i> by decree of 11 November 1935 [MFOM1383].
12 '?'	1012 w/n 10972	
13 '?'	1013 w/n 10973	
14 '?'	1014 w/n 10974	To <i>EFE</i> on loan as their 100.
15 '?'	1015 w/n 10975	To <i>EFE</i> on loan as their 101.
16 '?'	1016 w/n 10976	To <i>EFE</i> on loan as their 102.
17 '?'	1017 w/n 10977	Transferred to <i>FCIP</i> by decree of 11 November 1935 [MFOM1383].
18 '?'	1018 w/n 10978	Transferred to <i>FCIP</i> by decree of 11 November 1935 [MFOM1383].
		Later attached to a bogie tender; see diagram.
19 '?'	1019 w/n 10979	On <i>FCIPH</i> in 1961.



The above diagram shows the majority of these locos with 6-wheeled tenders, as built. That below shows the four that were fitted with bogie tenders probably from FCAB locos.



An FCNC 2-6-0 of the type described here, built by Henschel or O&K, at work

on a construction train in 1914. High resolution versions of the photo from which this was cropped may be available from Newton Abbot Railway Studies Collection at <http://newtonabbotrailwaystudies.co.uk> Note the twin low level headlights, rather than a single larger light in front of the chimney as was more usual.

2-6-0 d/w 1105mm 43½", cyls. 450x600mm, built by O&K in 1912

Identical, as far as is known, to the Henschel locos immediately above. All twelve present at reception of line by *DOP* in 1913, and in 1920 list [MFOM1383]. Running nos. and works nos. explicitly matched up in [MOBR2641]. Presumably all may have had names, given that one has been shown to have had one. NBL records suggest that they too tendered for the construction of these 2-6-0s and for the building of the batch of 0-6-0Ts which follow. Thanks are due to Martin Murray for providing the names of these engines from surviving O&K records.

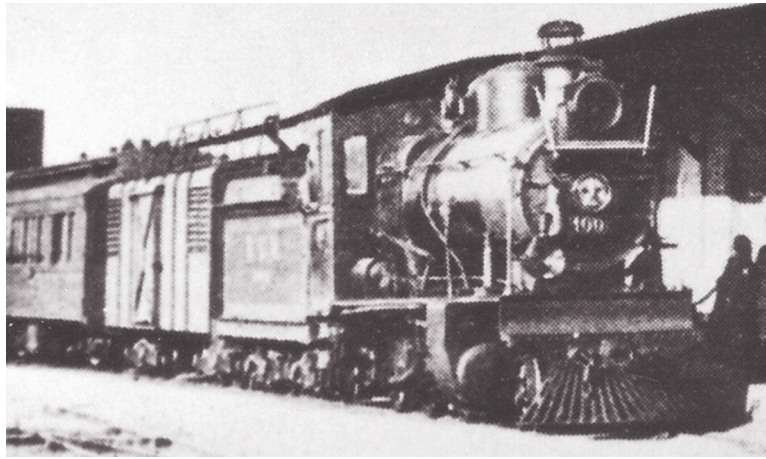
21 'AGUA SANTA'	1021	w/n 5201	
22 'TARAPACA'	1022	w/n 5202	Transferred officially to <i>FCIP</i> by decree of 22 January 1937 [MFOM1383].
23 'TACNA'	1023	w/n 5203	To <i>EFE</i> on loan as their 103 . Name shown on photo in O&K catalogue 870.
24 'CHORRILLOS'	1024	w/n 5204	Transferred officially to <i>FCIP</i> by decree of 22 January 1937 [MFOM1383]. Later attached to a bogie tender; see diagram.
25 'ANGAMOS'	1025	w/n 5205	To <i>EFE</i> on loan as their 104
26 'GENERAL BAQUEDANO'	1026	w/n 5206	Transferred officially to <i>FCIP</i> by decree of 22 January 1937 [MFOM1383]. Later attached to a bogie tender; see diagram.
27 'COVADONGA(?)'	1027	w/n 5207	O&K document shows name as ' CHOVODONGA ' but that is less likely. To <i>EFE</i> on loan as their 105
28 'BENJAMIN'	1028	w/n 5208	Transferred officially to <i>FCIP</i> by decree of 22 January 1937 [MFOM1383]. Later attached to a bogie tender; see diagram.
29 'JOSEFINA'	1029	w/n 5209	To <i>EFE</i> on loan as their 106
30 'VITALIA'	1030	w/n 5210	To <i>EFE</i> on loan as their 107 . Transferred officially to <i>FCIP</i> by decree of 11 November 1935 [MFOM1383].
31 'CONSTANCIA'	1031	w/n 5211	To <i>EFE</i> on loan as their 108
32 'CANADA'	1032	w/n 5212	To <i>EFE</i> on loan as their 109

The locos hired to the *Red Norte* were sent south at the end of 1915 along with a variety of rolling stock, initially until the end of 1918 but extended longer [*EFE Boletín* 1920 pp496-7 and pp1310-12]. The hire rate was \$5 (pesos?) per day.

Re nos. **1009, 1010, 1025, 1027, 1029, 1031, and 1032**: "The locomotives were leased to the *Red Central Norte* and returned in poor condition. Repair shall be for the account of Treasury. See Minutes signed in Santiago on 19 October 1929." [MOBR1393]



Image from O&K catalogue.



This image shows FCNC O&K 2-6-0 no. **1009** at La Serena station whilst on loan to the Red Norte. Only the digits 100 can be seen, but **1009** was the only engine loaned in this way with a number below 1010. Note the tender borrowed from some other type of loco.

0-6-0T d/w 900mm, cyls. 340x400mm, built by O&K in 1912

All six present at reception of line by DOP in 1913, and in 1920 list [MFOM1383]. Listed as '*maniobras*' in 1937 stocklist, all six present at that time. Running nos. and works nos. specifically matched up in [MOBR2641].

33 **1033** w/n 5461

34 **1034** w/n 5462

35 **1035** w/n 5463

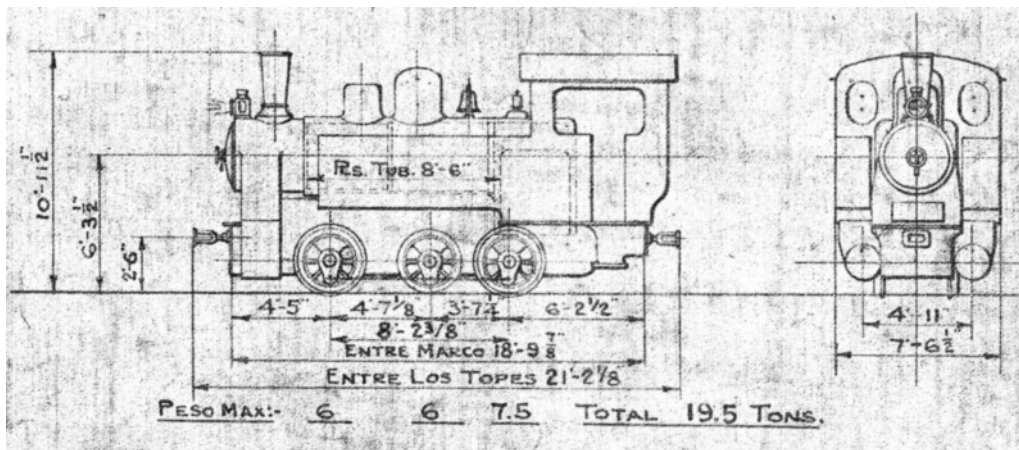
On FCIPH in 1961 and 1971. Visible in photo of El Colorado roundhouse in 1976. Stored at Iquique 1978 [16].

Survives plinthed at *Oficina Humberstone*.

36 **1036** w/n 5464

37 **1037** w/n 5465

38 **1038** w/n 5466





Surviving loco **35 / 1035** at Oficina Humberstone.

MacDonnell, Gibbs & MacDougall also purchased an earlier O&K 0-6-0T for Chile in 1912. Whether this too was passed on to the operational railway is unknown, but unlikely.

? w/n 4480

A company was formed by the *FC Antofagasta & Bolivia* to operate the Northern Section of the Chilean Longitudinal Ry. in 1919. In the 1950s this line was combined with the *EFE* Iquique-Pintados section, also metre gauge, and the Nitrate Railways (1435mm) to form the *FC Iquique-Pueblo Hundido (FCIPH)*.

Size of the fleet

The total stock was given as 38 locos from 1917 until 1925 when it rose to 40, and then to 43 in 1928. The 1930 US report [15] using data from 1927 gives the total as 40 locos. On the other hand, six 2-6-0 (**9, 10, 29-32**) are not given in the list of 1925. The loan locos to the *EFE* must have been handed over before 1921 or they would have received 3000 series numbers immediately on transfer.

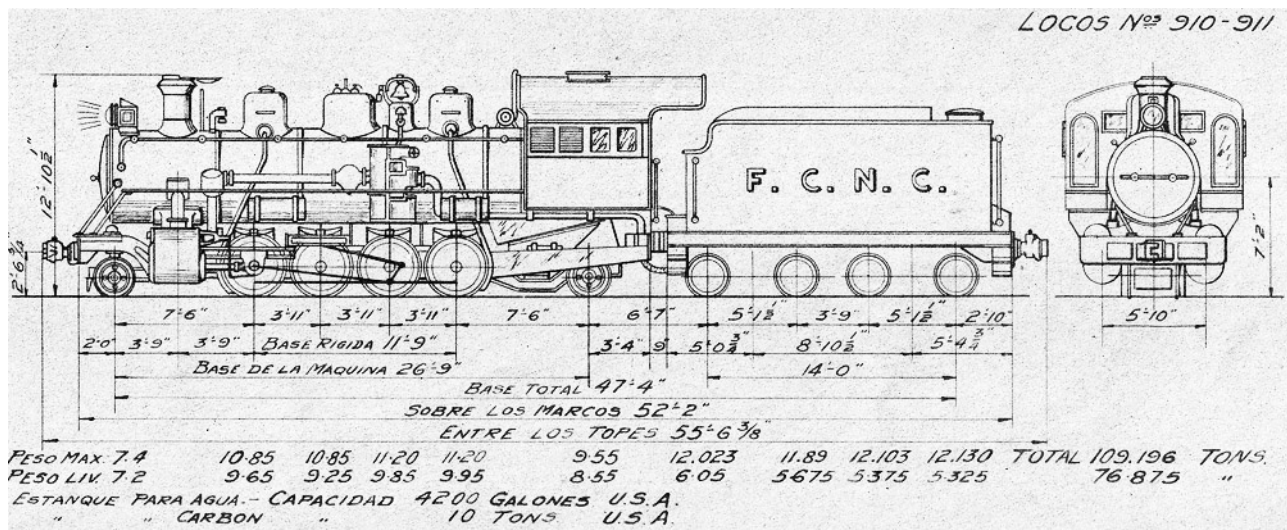
Extra 2-8-2 locos built later

These were numbered in the main *FCAB* sequence:

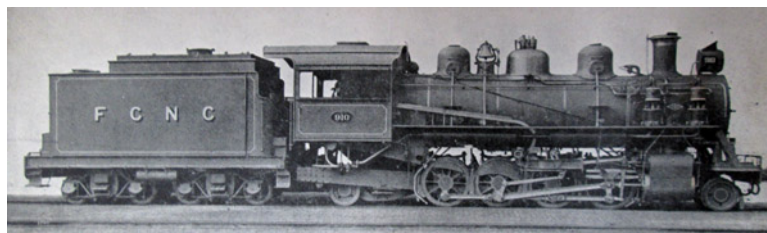
2-8-2 d/w 44", cyls. 19"x24", built by NBL at Queens Park in 1925

These must have been the pair of locos authorised to be purchased in Sept. 1924 after tenders had been invited from Kitson, YE, AW, HL and NBL [MFER213]. Both present in 1937 inventory. NBL order no. L808 dated 23rd April 1925 for *FCAB*. Oil burning and fitted with superheate and Worthington feed-water-heater. Delivery to be end of September 1925.

910	w/n 23298	On <i>FCIPH</i> in 1961 and 1971.
911	w/n 23299	On <i>FCIPH</i> in 1971.



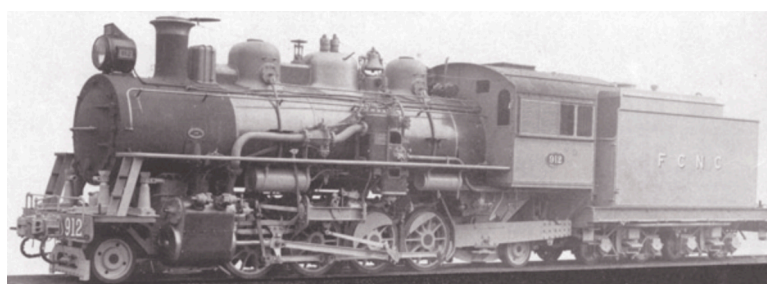
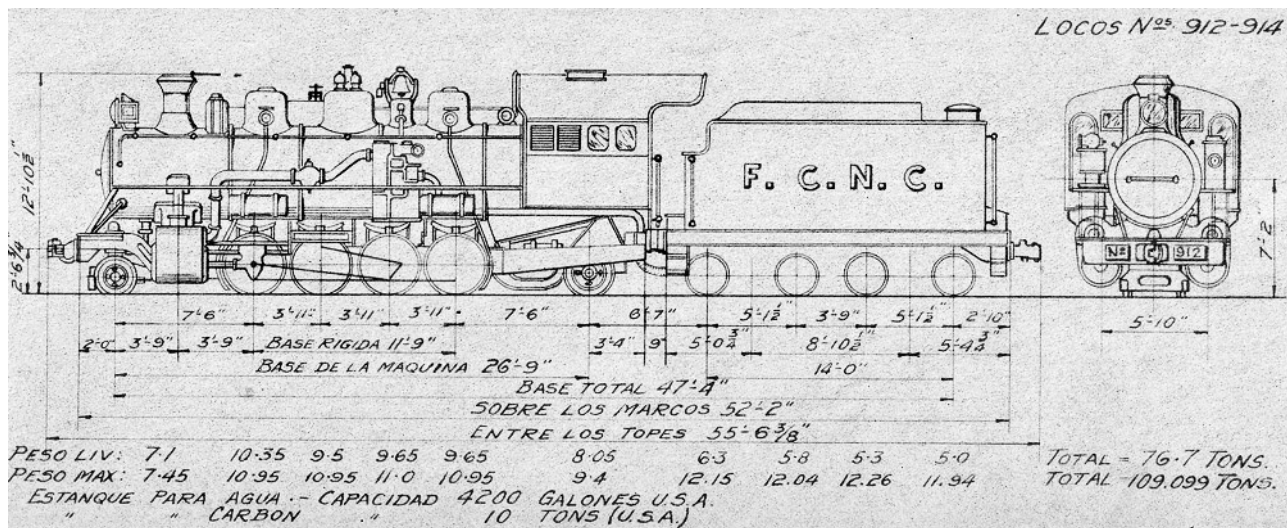
From FCAB's diagram book blueprint. FCNC nos. **910-911**.



2-8-2 d/w 44", cyls. 19"x24", built by Beyer Peacock in 1928

Purchase authorised November 1926 [MFOM1383]. All three present in 1937 inventory.

- | | | |
|---|---|--|
| <p>912</p> <p>913</p> <p>914</p> | <p>w/n 6414</p> <p>w/n 6415</p> <p>w/n 6416</p> | <p>2 out of this 3 on <i>FCIPH</i> in 1971. 912 stored Iquique 1978 [16].</p> <p>May have been withdrawn before 1961, see below.</p> |
|---|---|--|



BP builders' pic, D. Binns collection via Turner & Ellis's book

2-8-2 d/w 44", cyls. 19"x24", built by the Yorkshire Engine Co. in 1955

915 w/n 2554

On *FCIPH* in 1971.

916 w/n 2555

On *FCIPH* in 1971. Stored Baquedano 1978.



An accident casualty

Ian Thomson has stated that one of these seven 2-8-2s, possibly the third of the Beyer Peacock batch, had been seriously damaged at some point before 1961, and had then been dismantled. Six were in service in that year.

The *EFE* takeover in 1961

Once the *EFE* took over the running of this railway from the *FCAB*, it was operated jointly with the *FCIP* under the name *FC de Iquique*.

3.1.5 *El FC Trasandino Chileno*

Background

1000mm Gauge, 3-bar Abt rack system. J. M. Clark & Co., concession with the Chilean Transandine Construction Co. In 1896 the Transandine Construction Co. took over the completed 16¾ miles to Salto del Soldado. Opened to Juncal in 1906, to Portillo in 1908 and through the summit tunnel to Argentina in May 1910. The railway was taken over by the *EFE* in 1934. It was one of only two Abt rack railway to use a three bar system, proposed by Enrique Budge but opposed by Herr Roman Abt. (The other seems to have been the *FC Pto. Cabello á Valencia* in Venezuela.) The line was adhesion-worked from Los Andes up to Rio Blanco where the rack locos took over.

Locos used during construction but ending up on the Argentine side of the hill

0-6-0ST d/w 42", cyls. 14x20", built by Hawthorn Leslie for Clark & Co. in 1887

600gall. tank and 140psi. Eric Maxwell writes that it was ordered on 12th November 1886 and delivery is recorded in the very fast time of 28th December 1886. May have been for the Argentine end from the start.

2? 'VOY a CHILE' w/n 2072 Later entered *FCTA* stock.

0-6-0T d/w ?, cyls ?, built by Hunslet in 1889, for F. F. and M. Clark & Co for 'Transandine Railway'

Certainly ended up on the *FCTA* as class D11.

1 'ABEJA' w/n 500 In use at Mendoza 1929.

Locos used during construction but ending up on the Chilean side

0-6-0T d/w 39", cyls 14½"x20", built by Hawthorn Leslie in 1889

Nos. 1-2 ordered via J. E. & M. Clark & Co., Newcastle for Chilean Transandine Ry. Co. Ordered December 1888, delivered 12th May 1889. Tanks 450 gallons. Used on adhesion trackage between Los Andes and Rio Blanco, although No. 1 worked construction trains during building of the Summit Tunnel. One still in service as of 30 June 1928 as a yard engine.

1 'JOSÉ MANUEL BALMACEDA' w/n 2140	Became <i>EFE</i> 3050. Worked at summit during tunnel construction there [22]. At Los Andes until 1963 or 1964 and then scrapped.
2 'VICUÑA MACKENNA' w/n 2141	[36] states that it was this loco rather than no. 1 which remained at Los Andes until the 1960s, designated under the <i>EFE</i> as <i>tipo K</i> no. 3050.



Photo of no. 1, presumably a builders' pic on completion. Source Donald Binns' article in *Locomotives International* no. 1, 1989.

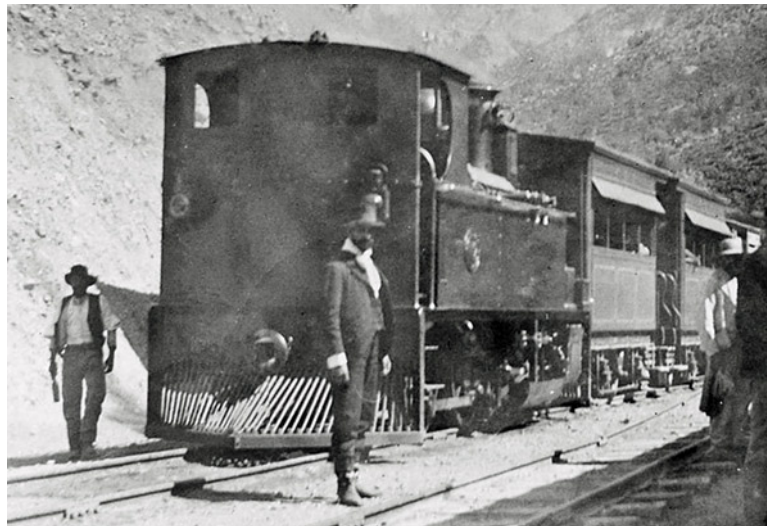
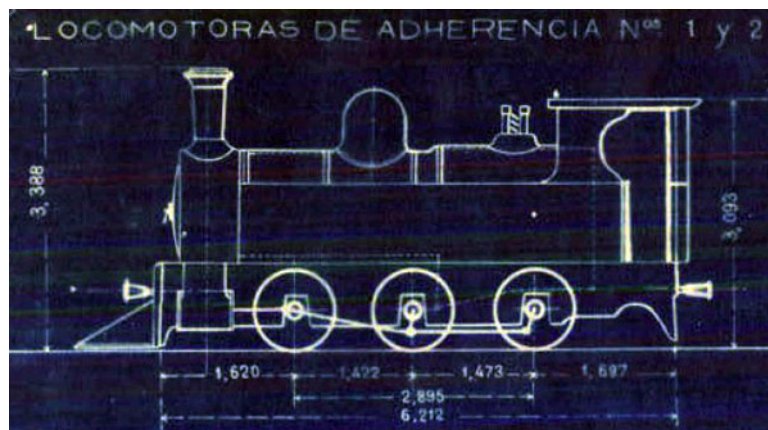
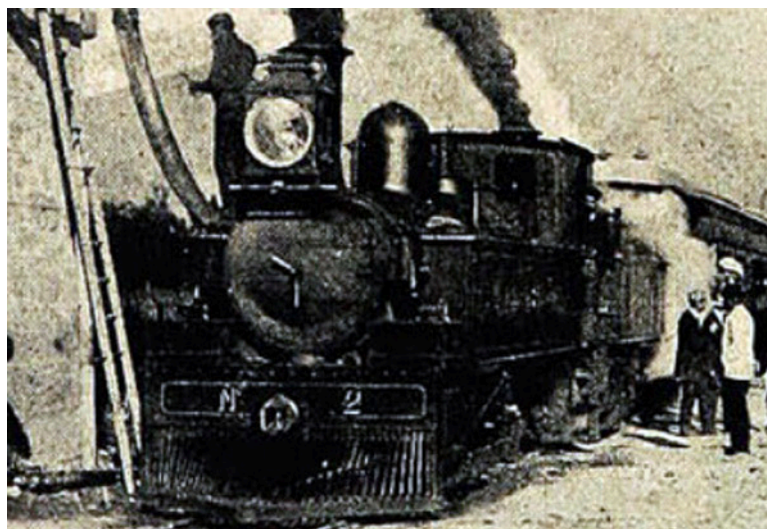
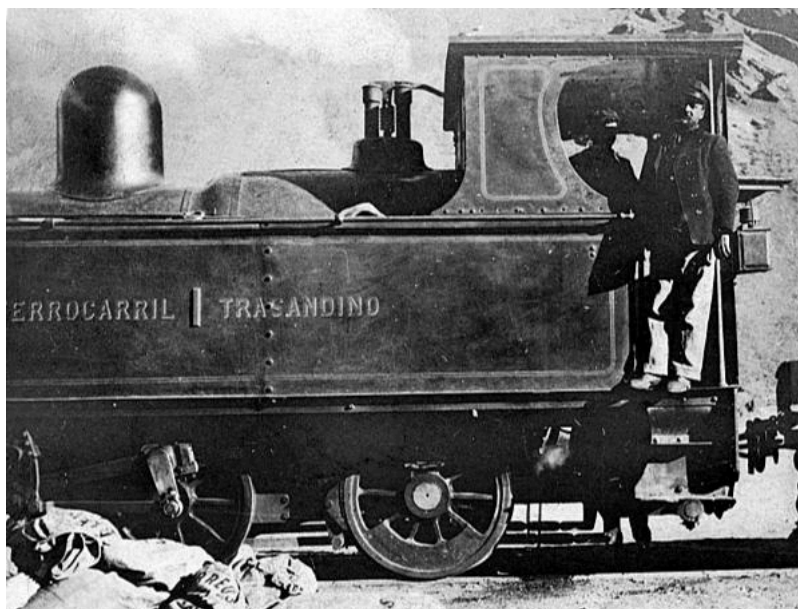


Photo taken at Estación Salto del Soldado in 1897.
 Provided by courtesy of Peter Berger from the ETH Zurich image archive.
 Note the motion cover had been removed.



No. 2 taking water at Río Blanco in 1909. It seems likely that no. 1 is behind it but swathed in steam.



A partial view of no. 1, included here for its glimpse of a different livery and lettering style.

0-6-0T d/w 39", cyls. 13"x20", built by Yorkshire in 1898

One of two locos (YE 554-555) originally ordered by the British Government's War Office, possibly for the Sudan, but this one was delivered to the *FCTC* for construction work. P. C. Dewhurst, in a letter to John Poole dated October 1940, comments "*Now about contractors engine – Yorkshire Eng. Co. engine 554; it was not the contractors engine on the Chilean side, it was employed on the Argentine side when the Summit Tunnel was being made and when communication was completed it was brought over to Chile and after hanging around at Los Andes for some time was sold. It was a curious engine in respect to connecting – and side-rod arrangements and for some inexplicable reason I omitted to take a photo of it – a photo of a precisely similar engine existed in one of Y. E. Co's catalogues however.*"

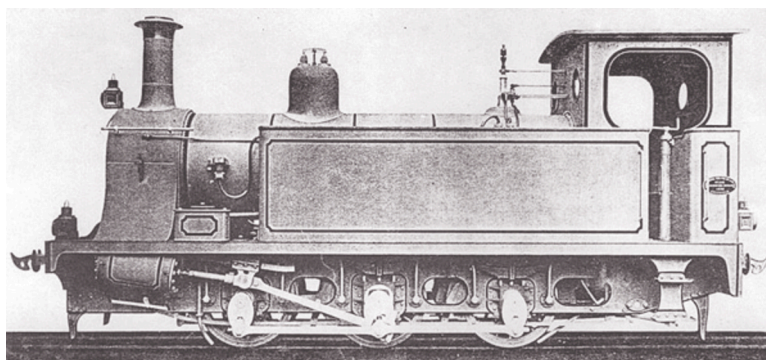
The reference to the connecting and side rod arrangements may be related to the fact that the inclined cylinders made it possible to put the coupling rods outside the connecting rods, the reverse of the usual arrangement but one shared with Penrhyn Quarry Railway Hunslet 0-4-0STs '**CHARLES**', '**LINDA**' and '**BLANCHE**', two of which have been on the Ffestiniog Railways since the early 1960s. This layout means that the cylinders can be closer together, thus narrowing the whole loco.

Tony Vernon [34] and [39] suggests that this engine eventually ended up on the *Longitudinal*, though others suggest that both went to the Santa Fé Land Co. in northern Argentina, which later became *Forrestal* and then *Unitan SA*. The second one, YEC 555, seems to have been bought directly from the UK for Argentina, with the addition of a Kerr Stuart-built tender.

More recently, in 2019, a snapshot has surfaced showing loco 554 on the privately-owned *FC de Quintero* north of Valparaiso in 1923. This may well be the origin of the '*Longitudinal*' suggestion. It is not known whether the engine was purchased by the *FC de Quintero* or merely hired. See the *FC de Quintero* paragraphs in the Chilean Minor Independent Public Railways section (3.3.5) later in these documents for the photo mentioned.

0

w/n 554



A YECO builders' photo of one of the pair.



Three locos present in 1900

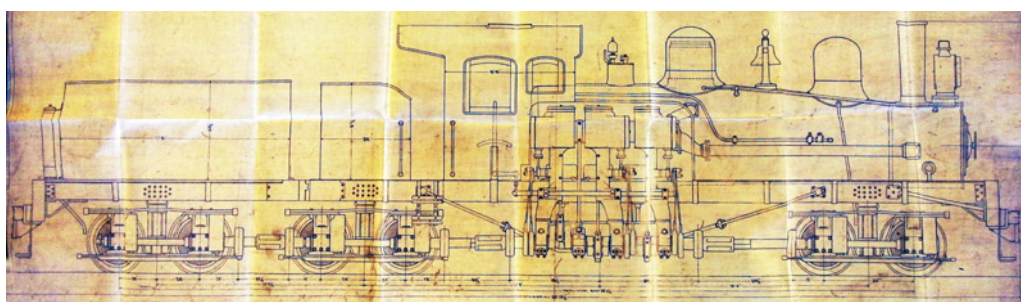
An inventory for the *FCTC* in 1900 [MOBR1382] says that there were three locos in total, 2 of 22 tons each, and 1 of 3 1/2 tons. The latter was presumably the Merryweather inspection car listed on the following page.

0-4-4-4-0 Three truck Shay d/w 36", cyls. 12"x15", built by Lima in 1904

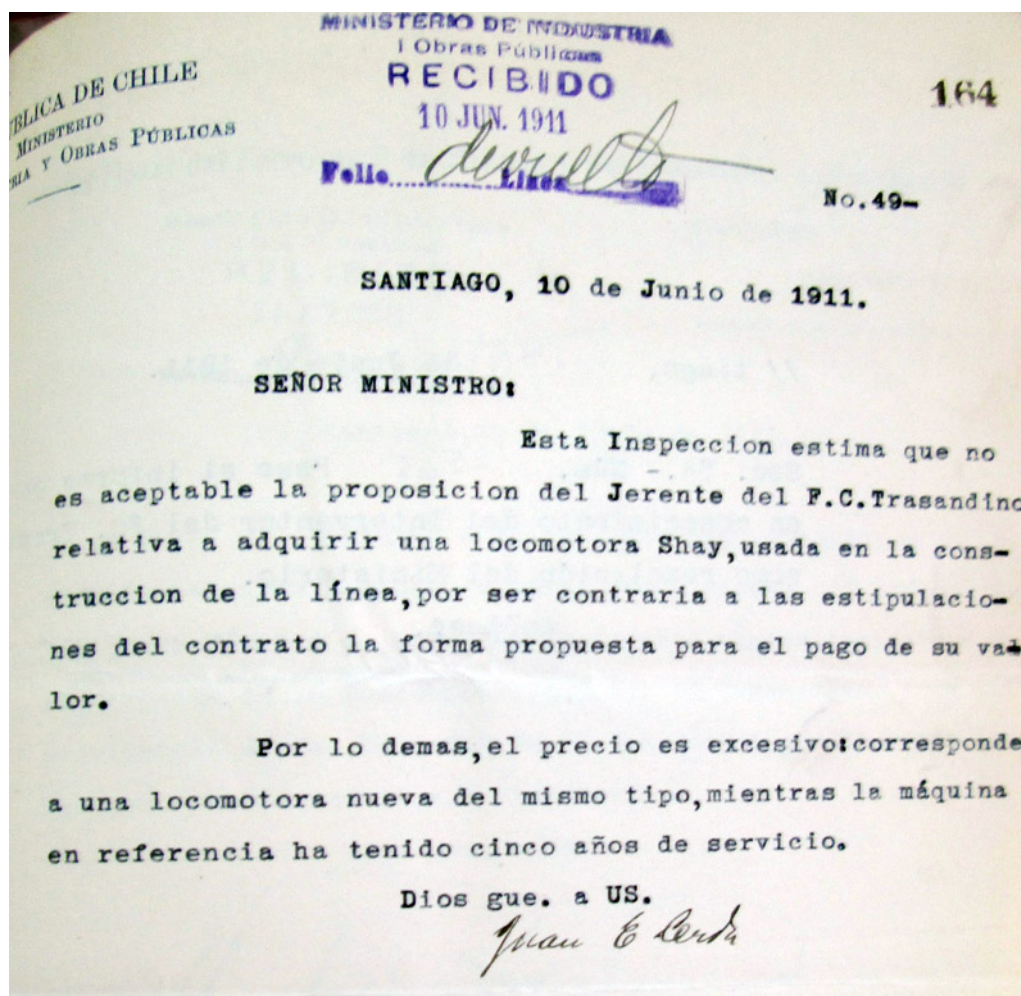
No. 3 ordered via W. R. Grace & Co. for Transandine Construction Co. Used mostly on rack sections for work service. Still in use 30 June 1928 for ballast trains. To judge from the large steam pipe leading from the smokebox to the engine unit in the drawing below, this loco was superheated from new. Fawcett says was later fitted with a counter-pressure brake, but not confirmed.

3

w/n 925



Copied from large blueprint in P. D. Dewhurst collection at NRM in York, with colours reversed to improve clarity. There are minor differences between this drawing and the photo below. Whether these were present from new or were later alterations is not known. Alternatively Lima may have sent Dewhurst a GA of a similar though slightly later loco.



A letter recommending that the EFE did not purchase the FCTC's Shay loco which was clearly up for sale in 1911.

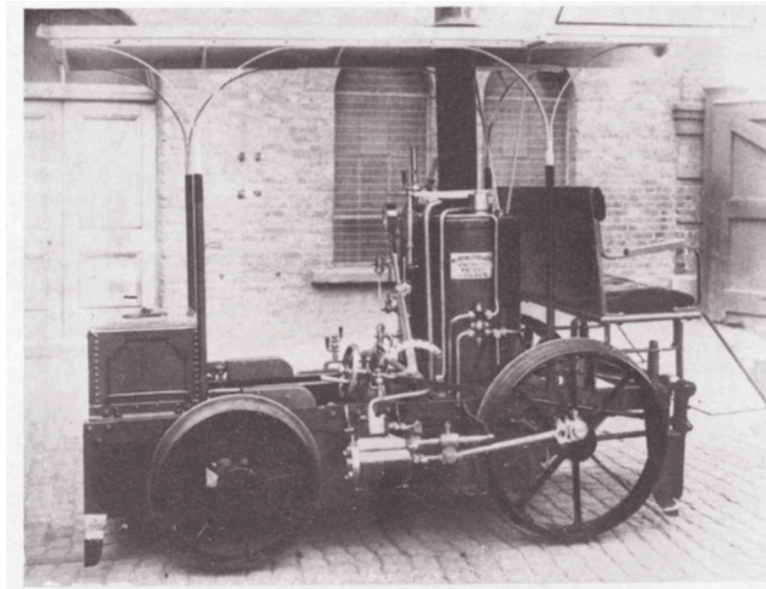
Locos purchased for the operating railway – Chilean section only

0-2-2T d/w 30", cyls. 5½"x6", built by Merryweather in 1890

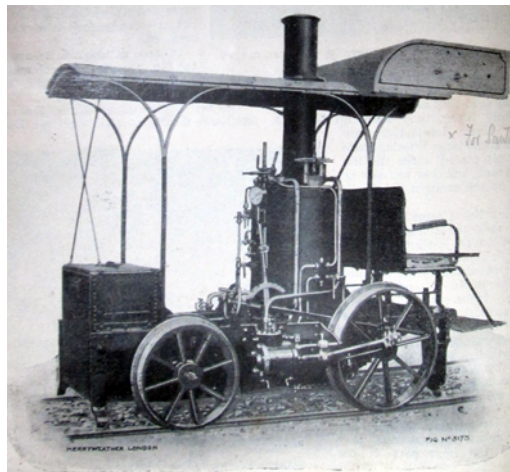
A Merryweather advert states that three of these were purchased for the *Trasandino Argentino*, but the whole of the Transandine may have been meant. Just one is recorded on the FCTC and one has been seen in a picture at Cacheuta on the Argentine side. When compared with the first inspection car that the firm completed, probably for the standard gauge, it is clear that the front bench seat had been raised so that it could extend beyond the driving wheels. Photos published in *The Model Engineer* in 1968 [53] show three inspectors on that seat and a driver standing in the well behind.

?

w/n 1065 Inspection car



The Inspection car built for the FCTC is seen at Merryweather's works before shipment.



This Merryweather builder's pic, from the *Railway Magazine* in 1908, shows more clearly the extended canopy over the inspectors' seats at the front.

The original image was used by Merryweather in their advertising.

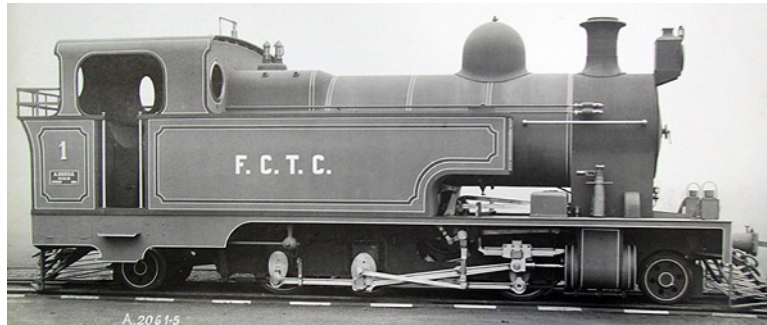
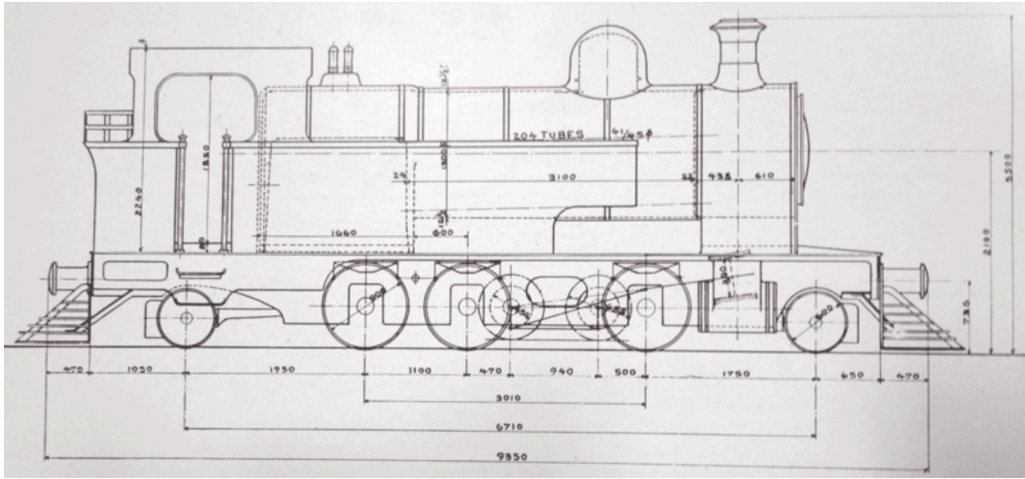
Tipo X

2-6z2-2T d/w 35½", cyls. 390x500mm 15 3/8"x19 3/4", built by Borsig in 1905

Nos. **4-5** from order for five rack tanks, numbered **1-5**. **1-3** assigned to Argentine section became nos. **13-15** there, and **1-2** to Chilean section where they were numbered **4-5**. Rack gear had 27 1/16" pinions, cyls. 390x 450mm 15 3/8"x 17 3/4". Joy valve gear, and counter-pressure brakes.

4	w/n 5507	Became <i>EFE 3324</i>
5	w/n 5508	Became <i>EFE 3325</i>

Both in service June 1928.



Borsig builder's photo. Note shown as numbered 1.

2-6z2-4T d/w 35½", cyls. 390x500mm 15 3/8"x19 3/4", built by Borsig in 1906

Despite its differences from the earlier 2-6z2-2Ts, this engine was also classed as *Tipo X*. Rack gear had cyls. 390x450mm 15 3/8" x17 3/4". Boiler mounted on a slope, downwards at front, as on many full rack locos. Joy valve gear, and counter-pressure brakes.

6

w/n 6063

Became *EFE 3326*

In service June 1928.

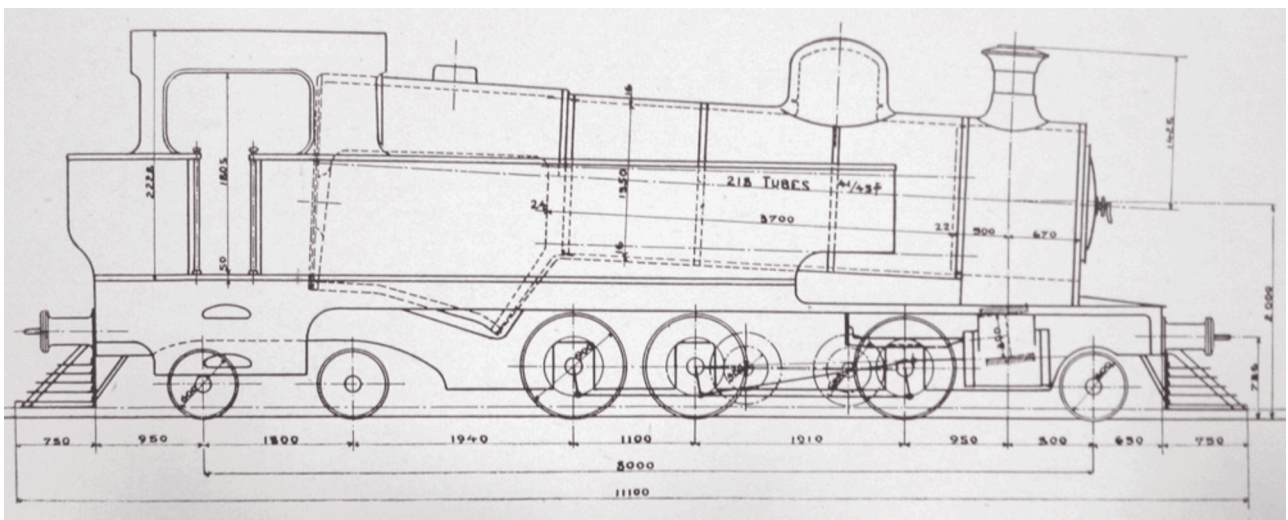
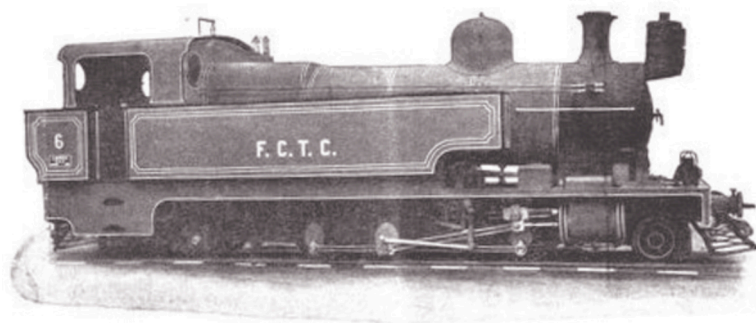


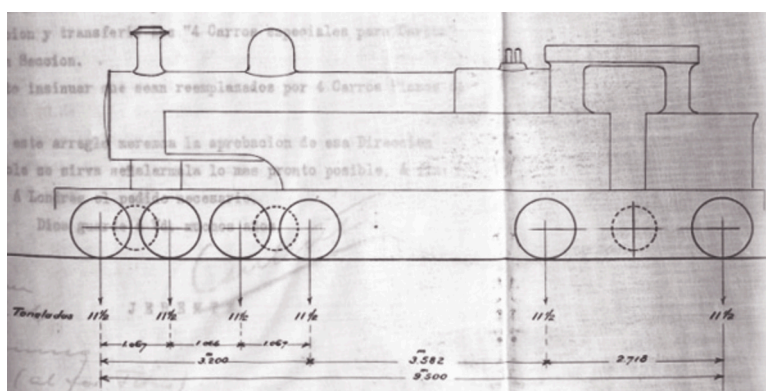
Diagram found in P. C. Dewhurst archive at the NRM in York.



Borsig builder's photo.

Early Meyer ideas

A sketch layout for an 0-8z2-4z1T rack-fitted Meyer tank loco survives in the Memoria Chilena collection online. This is dated as 1906 and labelled as (by or for?) C. P. White for the Transandine Construction Company Ltd. There is no indication of who suggested this layout nor of any possible builder, but it does show that Meyer locos were in the company's thoughts by that stage.



Sketch from the Memoria Chilena online collection. Original source unknown.

Beyer, Peacock 2-4z2-2Ts for Argentina not Chile

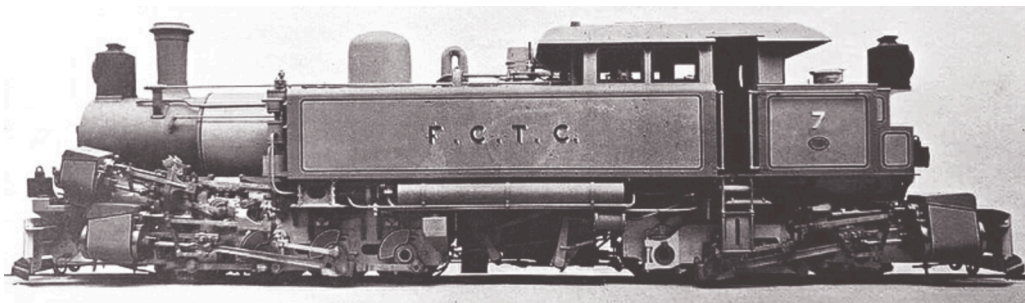
Several sources imply that Beyer Peacock rack and adhesion 2-4-2T locos 3171-4 of 1890 were built for the Chilean end of the Transandine line. However, this is incorrect; they were purchased for use on the Argentine side of the hill.

Tipo Z

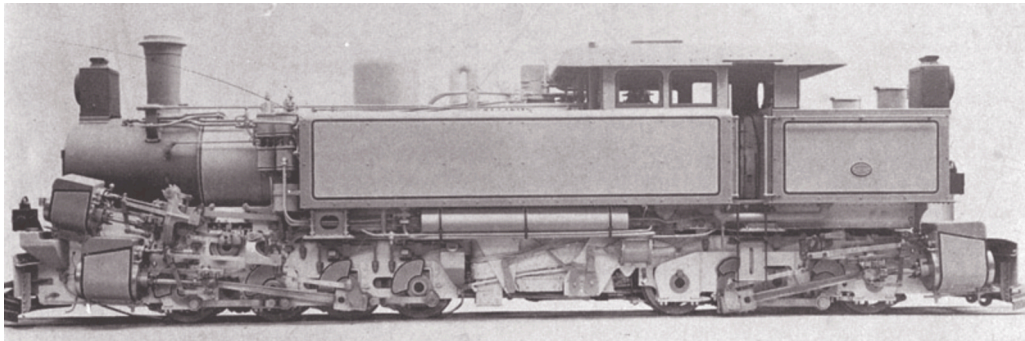
0-8z1+6z2T Kitson-Meyer d/w 36", cyls. 16.5"x19", rack cyls. 18"x19", built by Kitson in 1907 (7), 1908 (8), 1909 (9).

Originally had additional rack cylinders on front bogie but these were removed when it was discovered that the boiler could not supply sufficient steam. Donald Binns [35] says these were an addition by the *FCTC* against the recommendation of Livesey Son & Henderson who had designed the engines, and that this modification had required a reduction in boiler size to stay within axle loading limits. The extra rack cylinders were removed in 1911-14. Originally also fitted with condensing gear but this was removed in 1914, as were the band brakes on the rack pinions [54].

7	w/n 4488	Became <i>EFE 3347</i> . Scrapped in 1960s.
8	w/n 4598	Built with larger bunker and rear tank. Became <i>EFE 3348</i> . Out of use by 1971, when restored to service. Loco is intact at Los Andes.
9	w/n 4664	Built with larger bunker and rear tank. Became <i>EFE 3349</i> . Preserved at Santiago Railway museum.



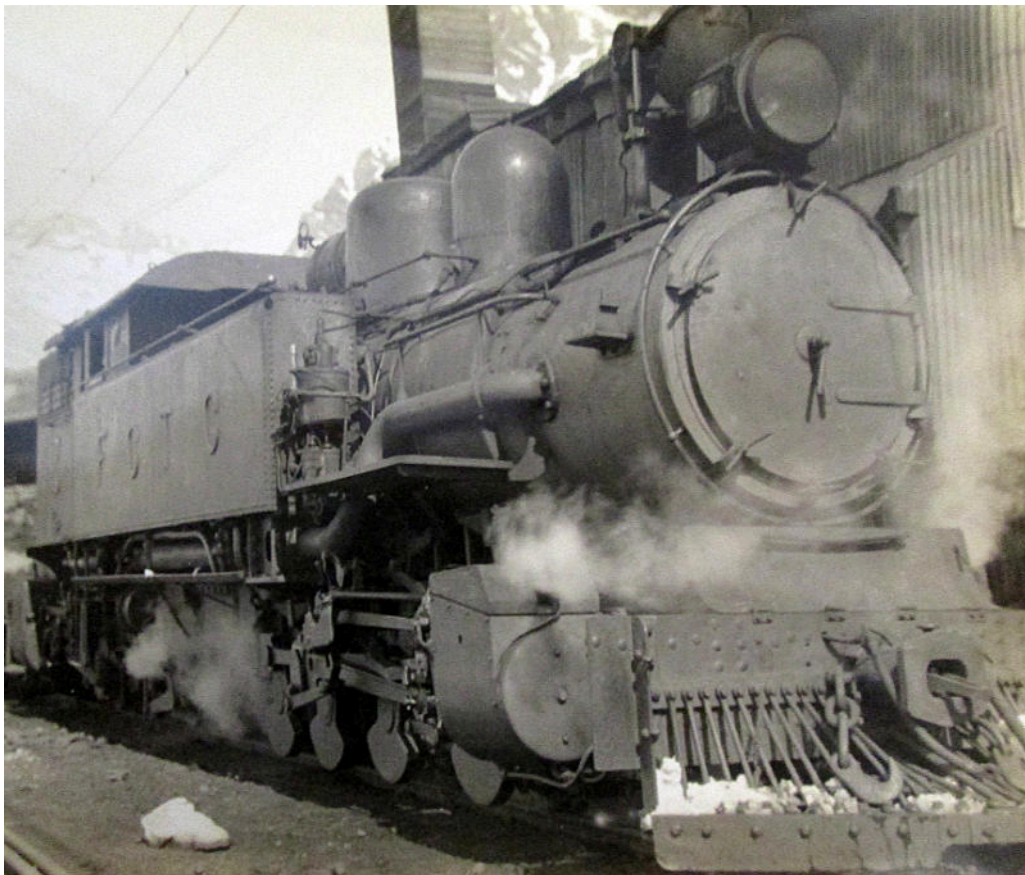
No. 7 as built, showing the additional rack cylinders alongside the smokebox, and the small bunker.



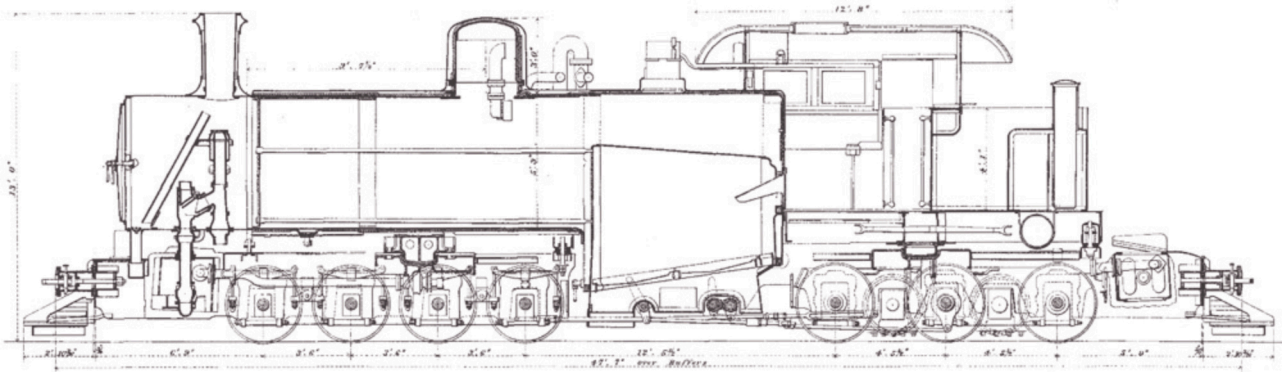
No. 8 as built, with a longer bunker and with a double air pump in place of the single one on no. 7.



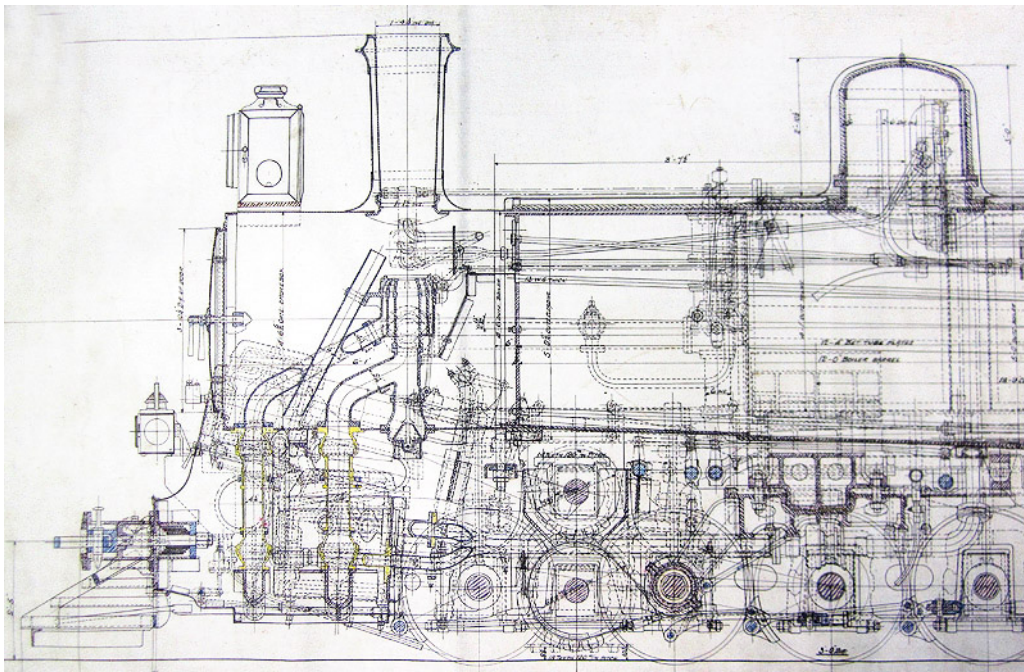
MCC's own pic of no. 9 (EFE no. 3349) taken at Quinta Normal museum. Note



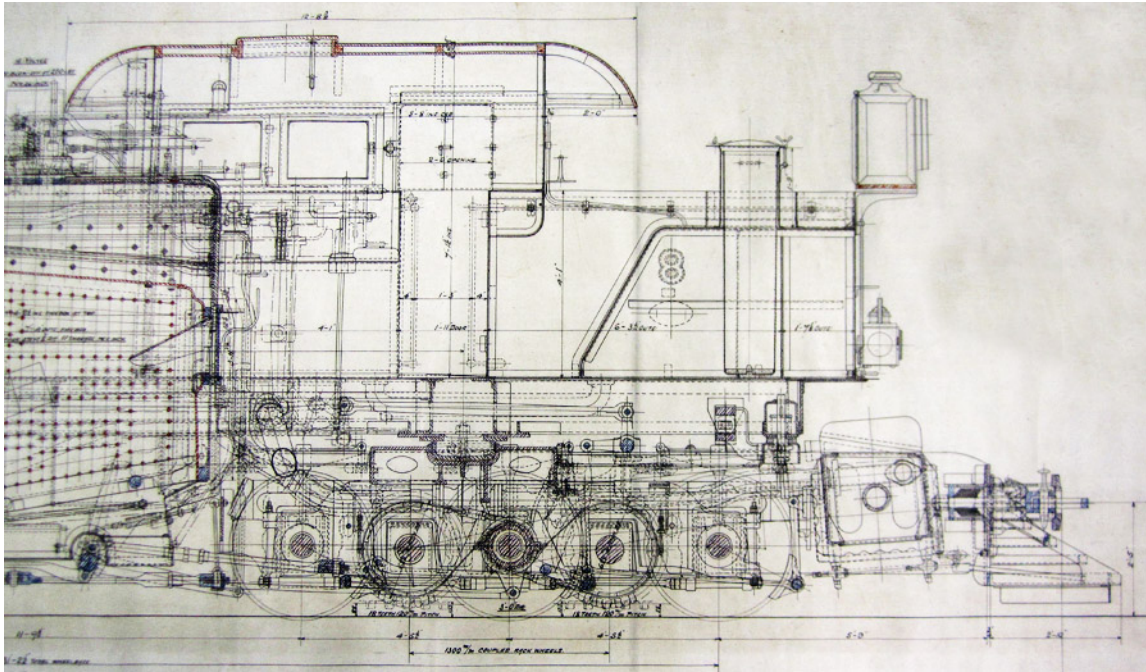
One of these three engines after the removal of the additional front rack cylinders. Note the slight difference from the side-on view above, in that the running board is rather shorter, finishing at the rear of the smokebox rather than extending to the front.



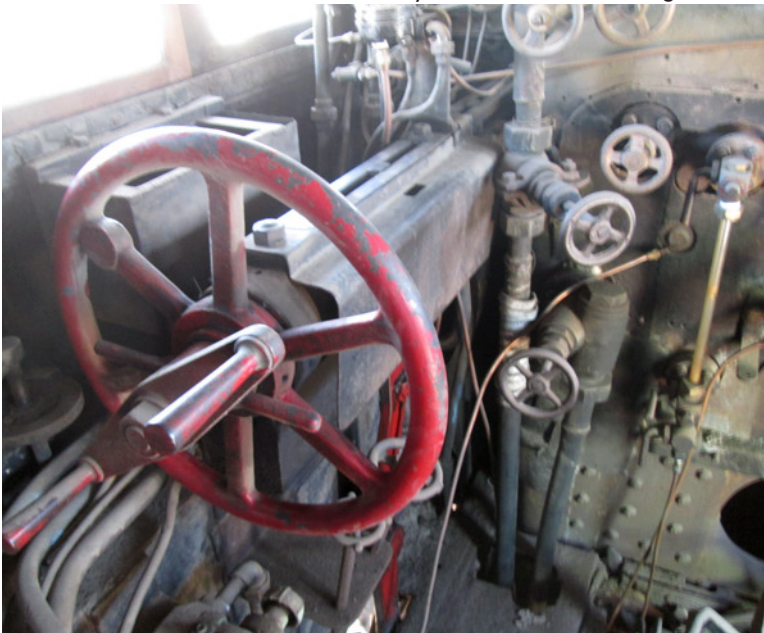
A sketch section as during later years when the front rack cylinders had been removed. In contrast, the part sections below show the locos as built.



This front end section as built shows clearly the annular three ring blast pipe (innermost from front bogie adhesion cylinders, intermediate ring from rear bogie rack cylinders, and outer ring from front bogie rack cylinders), and very faintly the raised and steeply sloping rack cylinders driving a high level jack-shaft geared directly to the rack pinion beneath it.



The rear end was obviously simpler, but the two rack pinions can be seen between the three carrying wheelsets as can the band-brakes both tensioned by a single sleeve around the central carrying axle. Note that unusually these Kitson-Meyers had no rear chimney, the exhaust all being routed back to the front of the loco.



Views within the cab of no. **8 / 3348** at Los Andes shed in 2016. The left hand photo shows the reverser handles and wheel – separately controlling the rack and adhesion cylinders. The right hand picture shows the two separate regulator handles – adhesion on the left and rack on the right – also the six-feed lubricator above and the extremely long gauge glasses in order to allow for a wide range of gradients.

The active fleet at the end of 1910

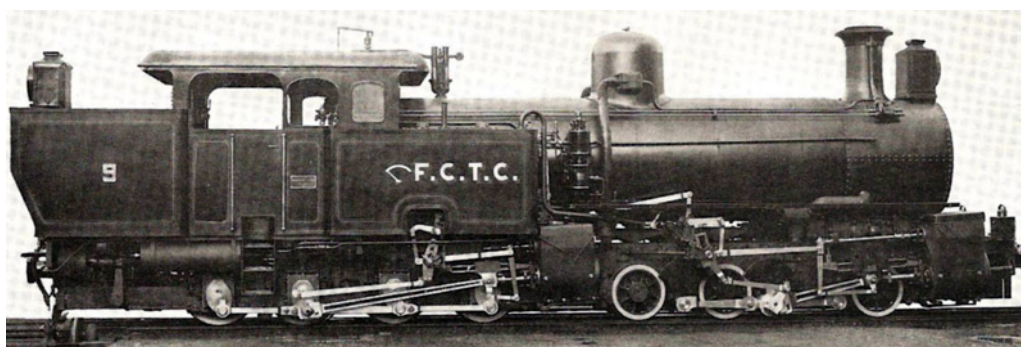
The *MIOP* accident report displayed in Appendix 2 explicitly states that the railway had nine locos in service at the tail end of 1910. These were listed as 2 *maniobras*, and 7 rack engines. Thus it seems certain that the YEC0 0-6-0T and the Shay had both been withdrawn from use by that point. The report strongly recommends that three more Esslingen locos be purchased, though of course only one more actually arrived – in 1911, and also suggests that the upper (forward) rack cylinders be removed from the Kitsons and that the rear rack cylinders be enlarged.

6z3-8-0T d/w 29½" (front), 35¾" (rear), cyls. 390x500mm 15 3/8"x19¾", built by Esslingen in 1908 (10), and 1911 (11). Rack cyls. 21¼"x17¾"

These were Meyers, with two swivelling bogies, but unusually the cab, bunker and tanks turned with the rear set of driving wheels rather than being aligned rigidly to the boiler. Note the expansion link of the front bogie, driven backwards from the second of the two rack pinion shafts rather than driven forward from an axle further back as is normal. This feature was also found on the *FCALP*'s 4z2-10-0Ts by Esslingen. Whilst first impressions in 1910 seemed to be that the Esslingens were better than the Kitsons, Brian Fawcett [48] comments that prolonged use showed that the Kitson locos were easier to maintain (3 hours to run out the bogies as opposed to 2 days), easier to rerail, and less costly overall.

Further comments appear in Wessel Duval's notes for Baldwin when ordering rack and adhesion locos for the *FCALP*: "Rack frame should be carried directly by adhesion axles without any springs. The *Trasandino* locomotives have the rack frame attached to main frame with springs between, with the result that when the locomotive gets too much speed and the band brakes are applied suddenly, the springs compress and the pinions mount the rack, causing generally the ditching of train. This accident has occurred several times on the Transandine, and the type has been condemned by the Chilean officials."

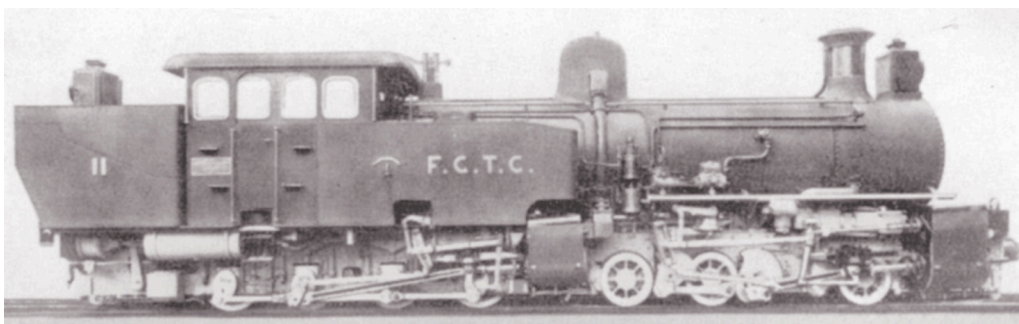
- | | | |
|----|----------|---|
| 10 | w/n 3477 | Delivered as no. 9, but renumbered after delivery of Kitson no. 9. Had short side tanks. Derailed and slid down mountainside very early in its career, on 20th September 1910. Dropping down from Portillo with a train of three coaches and five livestock cars, the driver noticed a steam escape, applied the air brake with no effect, then applied the handbrake which stripped some of the rack teeth. See Appendix 2 at end of this document for details. Became <i>EFE</i> 3350 in 1946. Worked until 1963, when the rack gear was damaged. Hauled dead to Los Andes and stored, then later scrapped. |
| 11 | w/n 3623 | Had longer side tanks extending over rear cylinders, and a second air pump. Originally fitted with condensing apparatus and direct-acting feed pump but these removed later [54]. Possibly became <i>EFE</i> 3351 but probably not. Believed wrecked near Juncalcillo in avalanche, possibly before 1928. See discussion below about this. Certainly the annual reports for years between 1931 and 1940 all list just one Esslingen loco in service. |



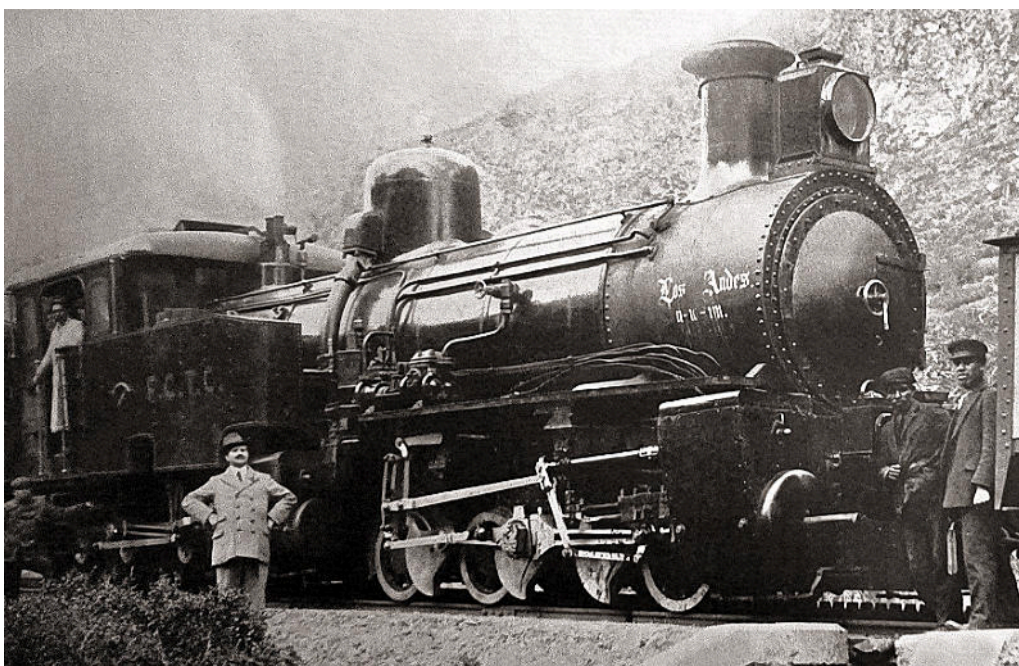
The original Esslingen, numbered 9 but later renumbered to 10.



Esslingen no. 9 (later renumbered as 10) early in its career but having running boards that were not visible on the builders's photo above.



The second Esslingen, no. 11, with longer tanks and modified steampipes and cab.



No. 11 is seen here bearing an inscription 'Los Andes 12-11-1911' on its smokebox. The significance of the date is unknown.

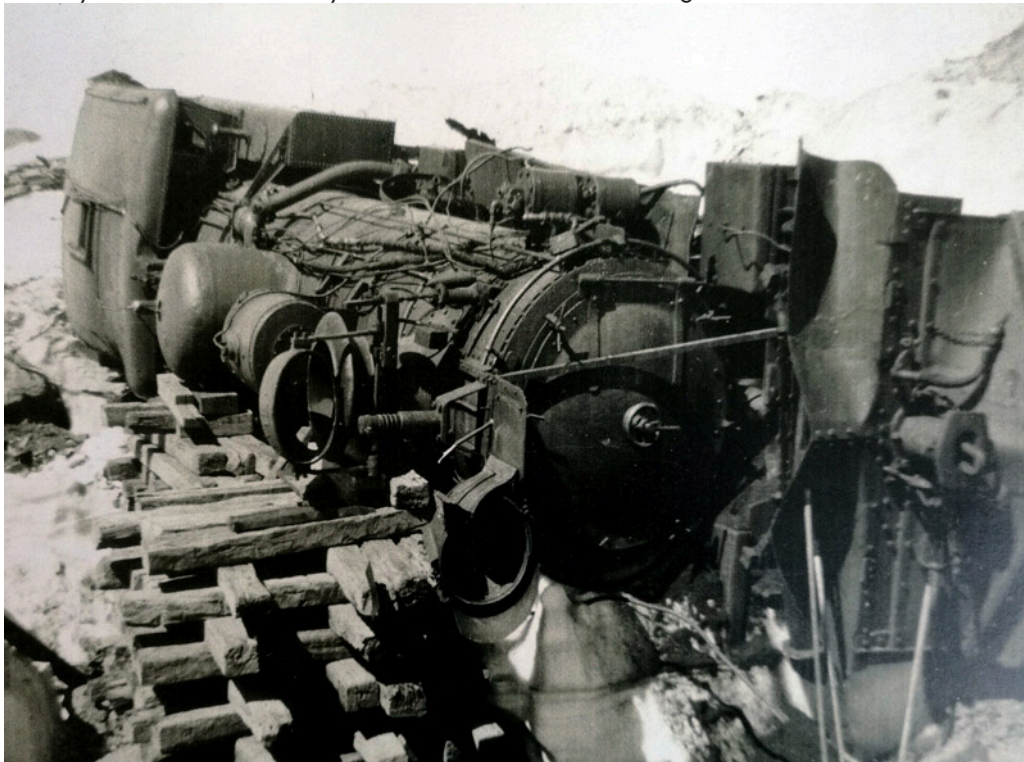
Distinguishing between the two Esslingen 6z3-8-0Ts

Whilst these two locos were easily distinguishable in their 'as built' conditions, many modifications were made during

the years that followed. Amongst the more obvious in photos are the replacement side tanks fitted to each, with a very clear large step up in the bottom line of the tanks. However, note that they were still not the same, the cab entrances remaining different. Thus no. **10** had longer tanks than no. **11**.



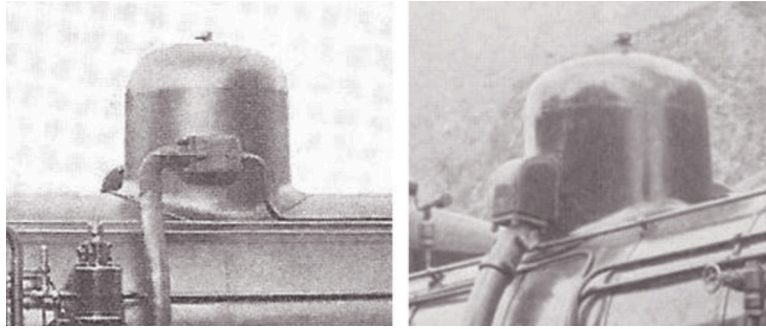
No. **10**, seen being recovered after a derailment in 1944, and with replacement tanks, having a long 'lower step' and a cab entrance immediately in front of the bunker. By that date the chimney has been shortened and has gained a moveable cowl.



On the same occasion, and before being brought upright. This view shows a number of details from an unusual viewpoint.



No. **11**, on the other hand has a short 'lower step' to its new tanks, as its cab entrance was further forward. The drum tank mounted above the boiler was a header tank for the counter-pressure brake.

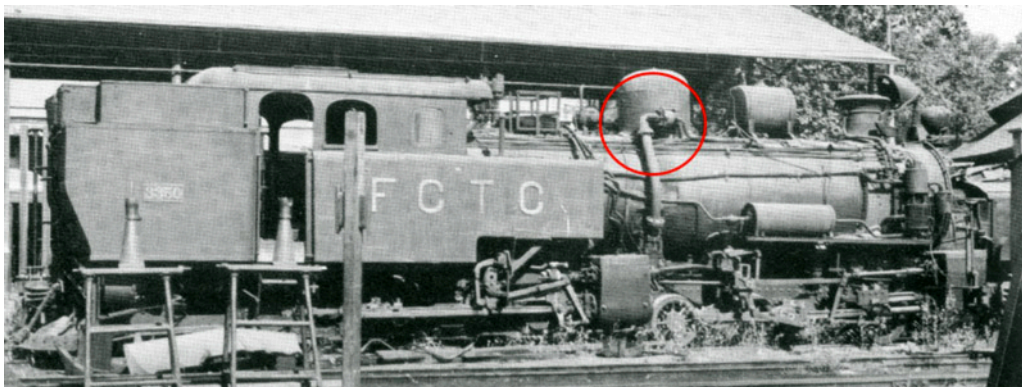


Jens Schindler has pointed out that the one infallible distinguishing feature, no matter what modifications were made, is the design of steampipe leaving the dome to supply the adhesion cylinders on the rear bogie. The left hand image above shows the earlier loco (no. **9**, later no. **10**) with its 90 degree bend in each pipe, whilst the right hand image shows the later loco (no. **11**) with pipes that went straight down from the dome.

Which loco was lost on the mountain?

Ian Thomson has been very open about his belief that it was no. **10** that derailed early in its life, slid down a hillside, was irrecoverable, and gradually got hidden from sight by a scree slope [46]. However, the document set out in Appendix 2, whilst it states that the loco was out of service after the accident of 20 September 1910, in no way implies that it had not been recovered.

Jens Schindler, on the other hand, has examined photographs more minutely in order to affirm that the surviving 0-6-8-0T in the 1950s, by then renumbered **3350**, was actually no. **10**, and thus it must have been no. **11** which was written off [47]. As the photos above show no. **11** with replacement side tanks, it seems unlikely that its destruction took place earlier than, say, ten or fifteen years into its life.



This 1963 photo of no. 3350 taken at Los Andes clearly illustrates the steam-pipes (circled red) as fitted to no. **9/10**, but also shows the long side tanks and cab doorways immediately in front of the bunker that were a feature of that engine.

Image copied from Jens Schindler's unpublished notes.



Another photo of no. 10 with its later style tanks.

A North British proposal

NBL records held in Glasgow suggest that one or more drawings were prepared during 1912 in readiness for tendering for the construction of an 0-6-2T design of locomotive for the *FCTC*.

Other rack locos?

ITN states [36] that *EFE* loco loading tables in the 1940s listed figures for *tipo Ua* locos on the *FCTC*, though Jens Schindler states clearly [private correspondence] that the two bar rack locos would have been totally incompatible with the three bar system owing to the differing heights of the rack pinion axles, and thus conversion from one system to the other was impracticable.

Arrivals at the end of 1944?

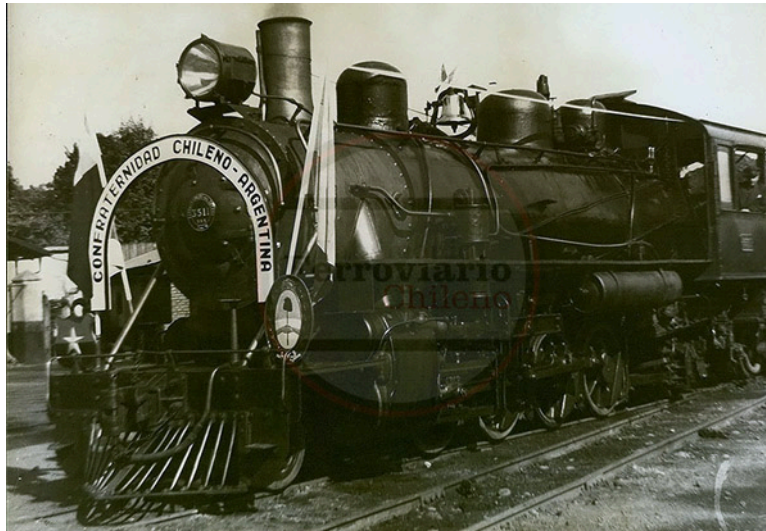
An *EFE memoria* from 1944 states that two of the (Henschel and O&K) 2-6-0s on the *FC Iquique-Pintados* were to be sent to the *FC Trasandino* during December of that year. No further details are known.

1950s and 1960 survivors

In 1956, the *FCTC* steam fleet consisted of No. 3050, 3324-3326, 3347-3350.

In 1968, the *FCTC* steam fleet consisted of 3348 and 3349.

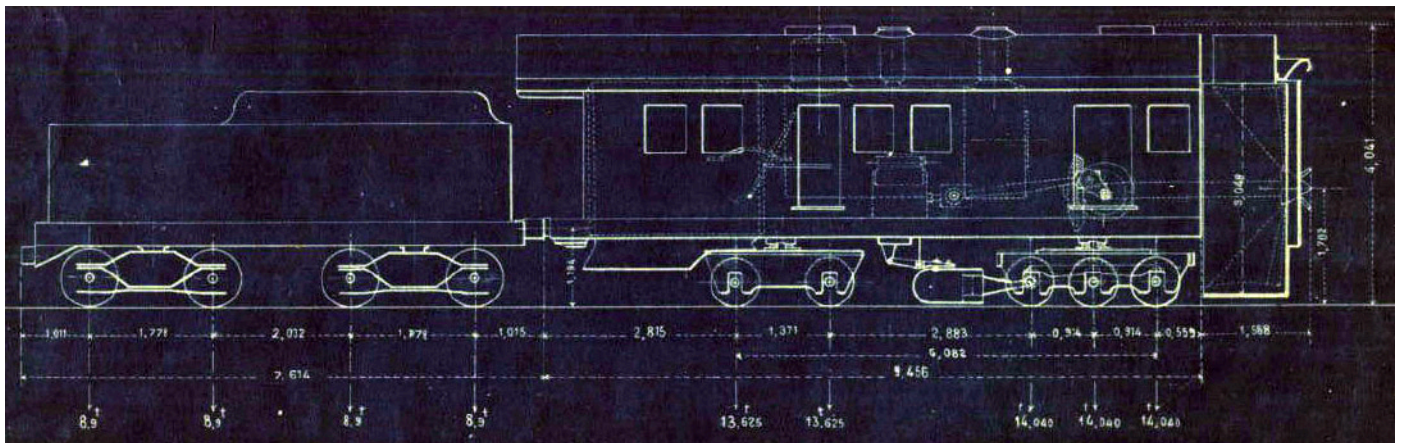
Several *EFE Tipo W* 2-8-2s were used on the line from time to time working the Los Andes-Rio Branco section. In 1954(?), no. 3511 was used here to pull the official train for visiting President Juan Domingo Perón of Argentina. In 1951 no. 3508 was listed as an *FC Trasandino* loco.



Tipo W no. **3511** at Los Andes on the occasion when it hauled President Perón of Argentina.

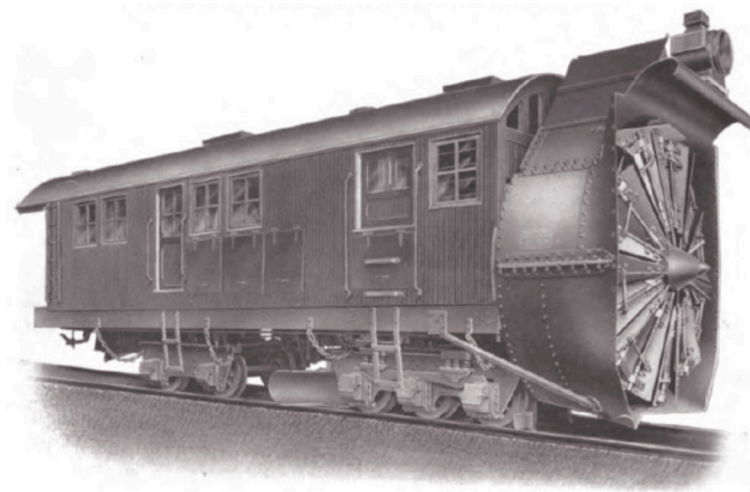
Not a loco but nevertheless steam-powered – a rotary snow-plough built by ALCo-Cooke in 1907

w/n 43060 This vehicle survives at Los Andes.



The plough is not self-propelled and was intended to be pushed by two Kitson-Meyers.

Its tender is clearly from an ALCo loco design with virtually no alteration.





The plough and its tender under the canopy at Los Andes shed in 2016.



If this does indeed show the *FCTC* rotary plough as built, as claimed, then it is clear that the original rectangular front end was removed at some point and replaced by curved ploughs that guided the snow towards the rotating blades.

3.1.6 *El FC Arica – La Paz*

Background

1000mm gauge, used Abt 2-bar rack system. Constructed by the Chilean government under the 1904 treaty of peace and friendship with Bolivia, which was intended to draw a line under the War of the Pacific of 1879-1882.

The first construction administration:

In March 1906 the tender of the *Sindicato de Obras Públicas*, a consortium of Chilean contractors including Napoleon Peró, José Pedro Alessandri, Julio Subercaseaux and Luis Barros Borgoño, was accepted for the railway's construction. The syndicate then purchased three 2-6-0s numbered **10-12**, an 0-8-0T numbered **20**, a pair of three truck Shays numbered **30-1**, and possibly a Borsig 0-6-0T numbered **1**, in 1907. It seems likely that these were numbered as the first of their classes, beginning at **1(?)**, **10**, **20** and **30**, rather than in strict numerical order.

2-6-0 d/w 42", cyls. 15x18", built by Baldwin in 1907? 510HP, 31.75/27.2T

BLW class 8-24D nos. 163-5. One of these locos was photographed by Sir John Jackson in late 1909 or early 1910, at work on the original but later abandoned alignment at Molino, carrying a smokebox number-plate bearing the number **4**. Only two of these engines were recorded in the inventory at the end of Sir John Jackson's contract.

4-5? 10 w/n 30474

4-5? 11 w/n 30473

4-5? 12 'RICARDO COX MÉNDEZ' w/n 30452

This name was carried later when under the ownership of the *DOP*, but the locos were not named on despatch from BLW.

0-8-0T d/w 42", cyls. 16"x20", built by Baldwin in 1907

Not recorded as having been in use during Sir John Jackson's contract.

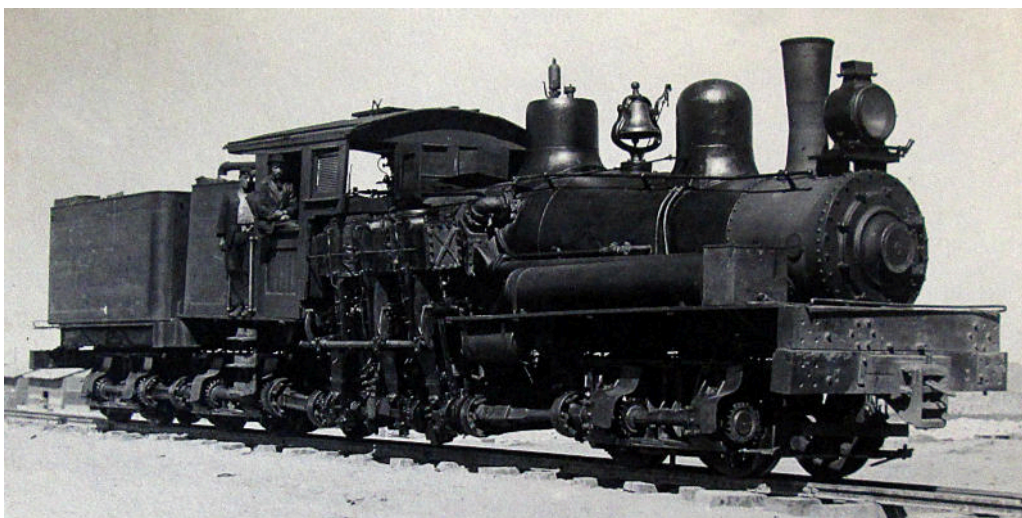
– 20 w/n 30407

0-4-4-0 Three truck Shays d/w 36", cyls. 12"x15", built by Lima in 1907

These were ordered by the *Sindicato de Obras Publicas*. One of these was photographed by Sir John Jackson early in his contract period (late 1909 or early 1910) carrying a smokebox numberplate bearing the number **6**.

6 30 w/n 1914

7 31 w/n 1915



One of the *FCALP* Shays is seen here numbered **6**, during construction by Sir John Jackson's employees.

Termination of the first contract

Alberto Decombe's *Historia del Ferrocarril de Arica a La Paz*, published in 1913, then says “*En atencion, pues, a que la marcha de los trabajos no correspondia a la magnitud de la obra ni al plazo fijado para su ejecucion, con fecha 3 de agosto de 1907 el Supremo Gobierno se vio en la necesidad de liquidar el contrato de construccion con el Sindicato de Obras Publicas, en conformidad a las bases jenerales acoradas entre el Gobierno y dicho Sindicato.*” ie. that owing to the lack of progress the contract was cancelled in August 1907. The Syndicate had by then railed the first 31km of track.

The second construction administration:

The government invited new tenders from those others who had tendered the first time, ie Deutsche Bank & Phillipp Holzmann i Cía., and S. Pearson & Son. Deutsche Bank & Phillipp Holzmann i Cía. were awarded a new contract in December 1907, but in the meantime work had continued under direct *DOP* supervision led by Ing. Benjamin Vianco. In May 1908, however, the contract with Deutsche Bank et al was annulled owing to disagreements about the manner of payment. New tenders were then invited, to be opened in April 1909. Ing. Manuel Ossa took over meanwhile as the *DOP*'s chief engineer in charge of construction. It was at this point that the original Josias Harding route via the Cajon de Lluta was abandoned in favour of one on the Pampa Central further north. Another 60km of line was completed during this period.

The *Sindicato* 2-6-0 and 0-8-0T locos listed above were all later in the ownership of the *DOP*, so the supposition must be that they were purchased from the erstwhile contractor when the *DOP* took over the work. The Shays were eventually passed from the later contractor, Sir John Jackson (Chile) Ltd., to the ownership of the completed railway. They may not have worked for the intervening *DOP* administration. The history of the Borsig 0-6-0T no. **1** is also unclear.

The third construction administration:

A new contract was let in May 1909 to Sir John Jackson (Chile) Ltd., who commenced work that July. This seems to have been more successful, with Sir John himself saying that the contract was completed three months ahead of schedule [29]. Alberto Decombe lists “*el siguiente que e adquirió de los contratistas*”: ie. the following which were acquired from the contractors (on the completion of the work, in order that they could join the service fleet). Whether this covers all of the locos used by SJJCL, or whether they had any other, possibly smaller, locos that did not pass to the railway's management, is unknown.

Notes added now		
Hawthorn Leslie	3	The HL 4-8-0s shown below.
Borsig grandes	3	The Borsig 2-8-0s shown below.
Remolcadoras	1	Unidentified
Cremallera, 64T	2	The pair of Esslingen 0-8-2zTs shown below.
Shay-g geared	2	The pair of Shays originally purchased by the <i>SOP</i> .
De maniobras	3	Unidentified.

Most are listed below, but the ‘*Remolcadoras*’ and ‘*De maniobras*’ have not yet been positively identified though they probably include the pair of HL 0-6-0Ts listed as numbers **9** and **10**, and maybe the Borsig 0-6-0T no. **1**. That still leaves at least one unknown engine. The three Baldwin 2-6-0s purchased first by the *SOP*, might have been included in this list, though they seem to have been retained by the *DOP* rather than entering the *FCALP*'s operational fleet. However, a list of locos purchased from Sir John Jackson Ltd at the end of his contract and recorded in [MOBR2490] includes nos.

1-3 by Borsig	presumably the 2-8-0s
4-5 by Baldwin	presumably the 2-6-0s
(6-7 presumably the Shays but completely unused by SJJL or so the file says)	
8 by R. W. Hawthorn	a mistake and identified elsewhere in the same file as the Borsig 0-6-0T
(9 possibly the Baldwin 0-8-0T but completely unused by SJJL or so the file says)	
10-11 by Esslingen	the 0-8z2-2Ts

12-14 by Hawthorn Leslie The 4-8-0s

15-16 by R. W. Hawthorn the 0-6-0TS

These were in addition to the 3 Esslingens, 4 Mallets and 6 Henschel moguls purchased new for the operation of the line. The pair of Hawthorn Leslie 0-6-0Ts also show up in a number of *DOP* documents considering the purchase of these larger locos, but obviously arrived before the construction was finished and were first put to work by the contractor.

The railway's initial operational fleet:

The official opening was in May 1913. Supposedly there was a renumbering in 1926, but evidence strongly suggests that this had occurred much earlier, by 1920, and possibly that there was further renumbering by 1926.

The columns of numbers below show:

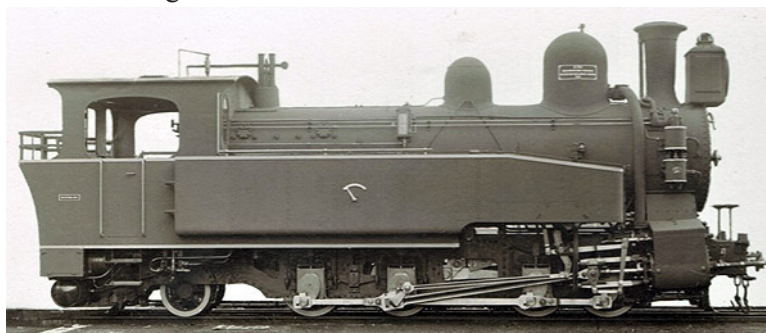
1	2	3	4	5
SJJ	Original	Country	New	<i>EFE</i> nos.
numbers	<i>FCALP</i>	to which	<i>FCALP</i>	if
during	numbers	allocated	numbers	allocated
constr.		after 1926	after '26	

0-8z2-2T d/w 940mm 37", cyls. 480x500mm, rack cyls. 430x450mm, built by Esslingen 1910-11

Later renumbered **76-77**. Delivered to and first used by contractors, see below. These were built just prior to those for the *Lonjitudinal Sur*; and seem to have been similar if not identical to those machines. A 1924 or thereabouts report for the Peruvian Corporation has these engines as numbered **20** and **21**.

10	1	Chile	76	3310	w/n 3561	[32] says ran 2,658km in 1929. Shown in 1937 <i>FCALP</i> list [20].
11	2	Chile	77	3311	w/n 3562	Not shown in 1937 <i>FCALP</i> list [20]. Ended up in an inaccessible gorge after an accident pre 1928. Parts remained there for many years.

One of the Esslingen 0-8z2-2Ts, either here or more probably on the *FC Lonjitudinal*, was named '**PEDRO MONTT**' as illustrated in an Esslingen GA drawing.



One of the first pair of *FCALP* Esslingen rack locos.



2-8-0 d/w 1100mm 43¼", cyls. 450x549mm 17¾"x21½", built by Borsig in 1909

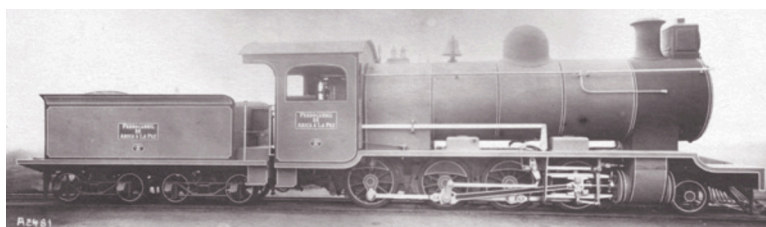
Originally **1-3** according to Borsig list, later **3-5**, and later renumbered **36-38**. Recorded as inspected and loaded at Borsig in September 1908, along with a fourth loco which must have been the tank loco no. **1**. Delivered to and first used by contractors, see below. [20] gives d/w as 40½".

1	3	Chile	36	w/n 7109	
2	4	Chile	37	w/n 7110	
3	5	Chile	38	w/n 7111	Hired to Bolivian end of railway in 1928-9.

All three recorded in service Charaña to El Alto around 1924, with running numbers **36-38**.

1929 [58]: "*Locomotoras Nos. 36, 37, 38 y 19., todas estas locomotoras son consolidadas y estan en servicio desde la construcción; son de vapor saturado e inadecuadas para el servicio de la Sección Chilena. No prestan ninguna clase de utilidades.*"

All three shown in 1937 *FCALP* list [20].



Borsig builder's pic, via Jens Schindler

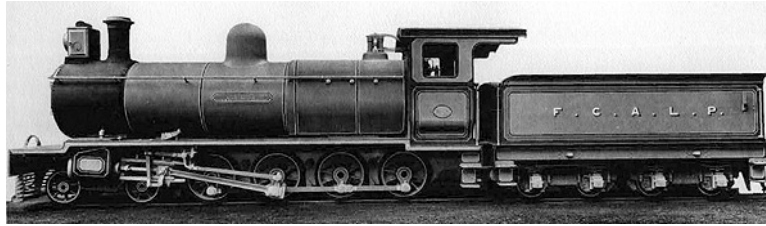
4-8-0 d/w 1028mm 40½", cyls, 432x533mm 17"x21", built by Hawthorn Leslie in 1910

Two ordered 24th Nov. 1909 via Sir John Jackson for Arica La Paz (Chile), and third ordered similarly on 20th January 1910. Delivered June and July 1910. Delivered to and first used by contractors, see below. Tenders 2250 gallons and numbered 1064-1065 and 1067. Lettering of plates has been erased in R&WH order book, so possibly it was changed. Order of works numbers is as shown in 1937 *FCALP* list [20]. The numbers **17-19** were quoted when these locos received new fireboxes in 1920, so the so-called 1926 numbers may well have been applied to other locos too well before that year [MFER119]. [23] says these locos were still named in 1955. The long plate attached to the boiler, seen in the photo below, was not a name-plate but carried the words: 'CONSTRUIDA PARA SIR JOHN JACKSON (CHILE) LIMITADO, INJENIEROS I CONTRATISTAS. POR R I W HAWTHORN, LESLIE & CIA, LTA, INGLATERRA'

12	6	Chile	17	3127	w/n 2814	<i>EFE</i> number 3127 tipo <i>L</i> according to PMF.
13	7	Chile	18		w/n 2822	
14	8	Chile	19		w/n 2813	1929 [58]: " <i>Locomotoras Nos. 36, 37, 38 y 19., todas estas locomotoras son consolidadas y estan en servi</i>

cio desde la construcción; son de vapor saturado e inadecuadas para el servicio de la Sección Chilena. No prestan ninguna clase de utilidades."

All three recorded as in service on Charaña to El Alto section around 1923, with running numbers **17-19**. One replacement boiler was ordered from HL in October 1924.

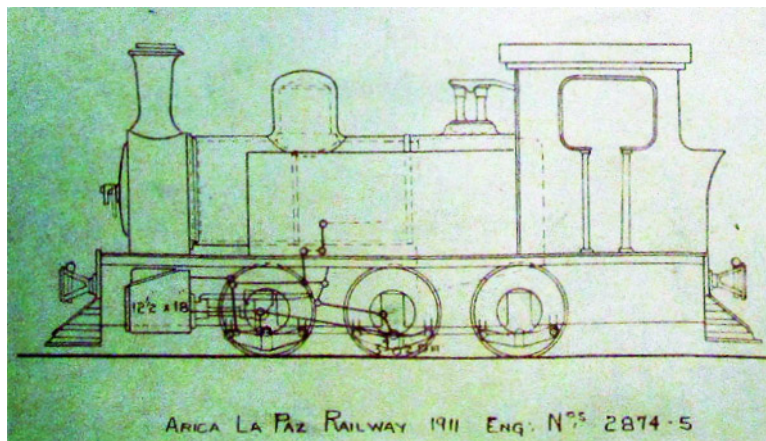


This image from *The Locomotive* magazine shows that these engines had belpaire fireboxes and the type of waisted-in cabsides often associated with locos in East Africa or Nigeria. Courtesy of Pablo Moraga.

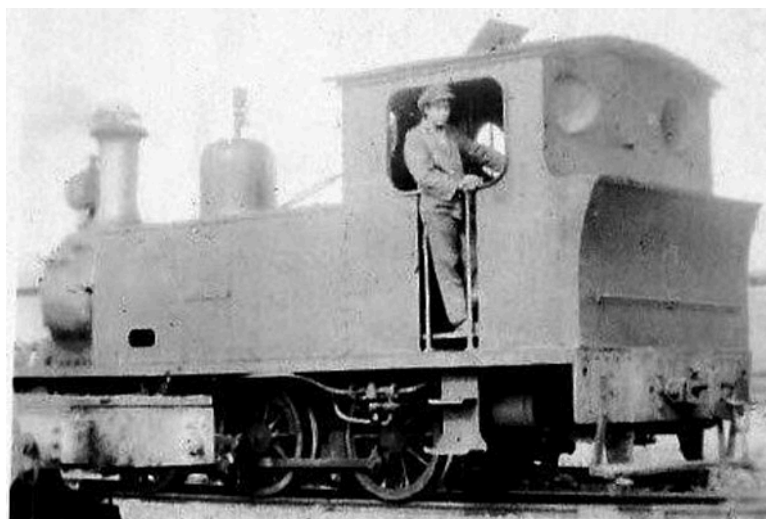
36½", cyls. 12½"x18", built by Hawthorn Leslie in 1911

Two ordered 28th Jan. 1911 via Sir John Jackson for Arica La Paz (Chile). Delivered 17th June 1911. Delivered to and first used by contractors, see below. A memo in [MOBR2401] says two shunting locos will need to be purchased new. The HL list gives the *FCALP* as the customer. A photo showing one of these with an *EFE* four figure front number-plate ending probably with a '2' has been seen.

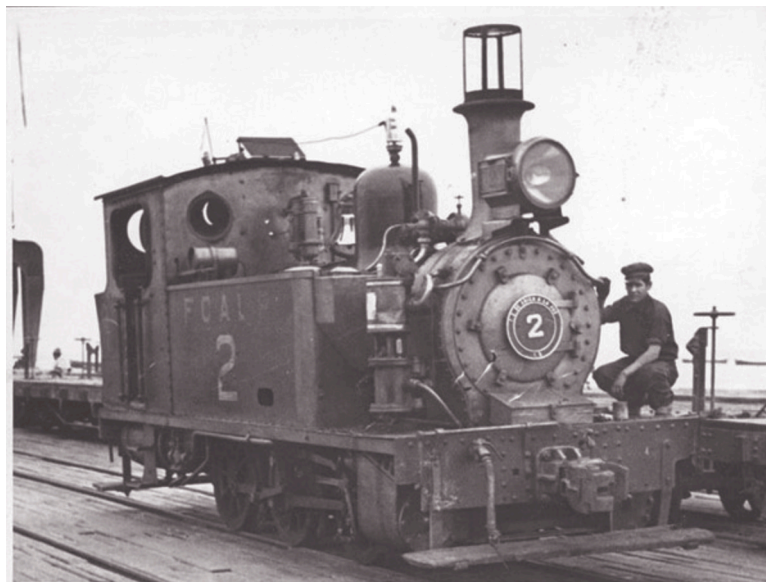
15	9	Chile	2	3???	w/n 2874
16	10	Chile	3	3???	w/n 2875



From a batch of Hawthorn sketch diagrams in the P. C. Dewhurst collection at the NRM.



One of the two HL 0-6-0Ts used as shunters, probably both in Arica.



This image is from <https://digitaltmuseum.se/> , and was discovered by Sam Eastwood.

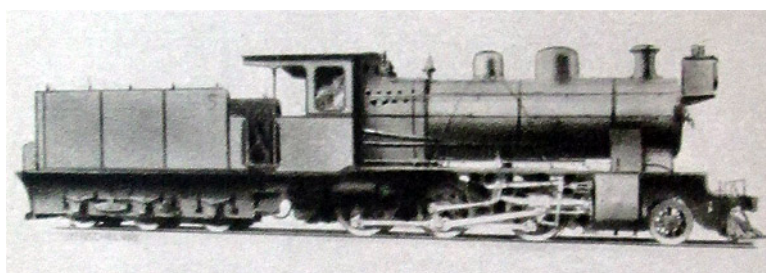
A puzzling reference to loco no. 5

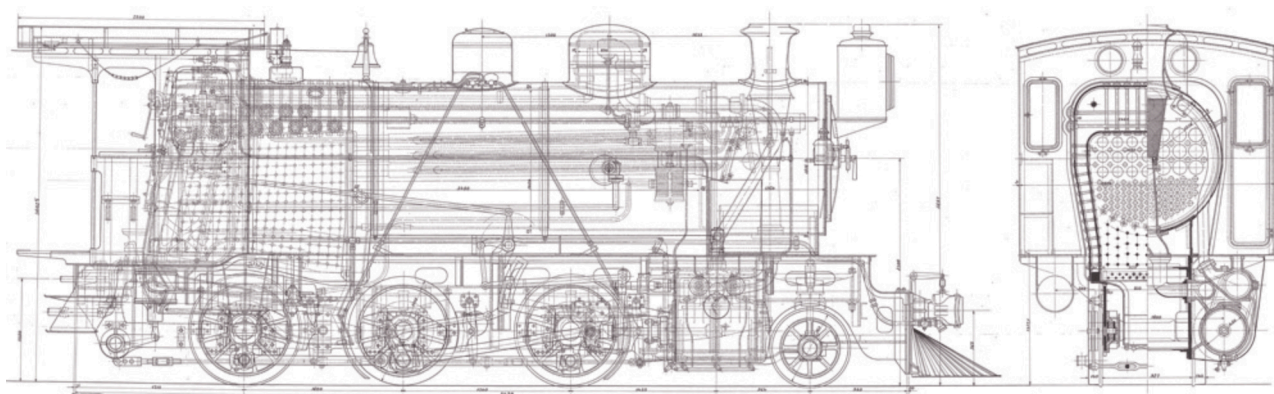
A letter dated 23rd July 1920, from the administration of the *FCALP* to the Minister of Railways, says: “*Las locomotoras Nos 2, 3 i 5, de maniobras, que estan en servicio hace diez años en este ferrocarril, desde el tiempo que lo construian los señores Sir John Jackson Comp. Ltd., tienen las cajas de fuego en mal estado i se impone el cambio de ellas para que estas locomotoras puedan prestar servicios eficientes en la movilizacion de la carga en los patios.*” It went on to request the expenditure of funds to repair these fireboxes. Nos. 2 and 3 are presumably as above, but what was no. 5? The ex Russian order ALCo 0-6-0T later numbered 5 did not arrive until 1926.

2-6-0 d/w 1105mm 43½", cyls. 450x600mm, built by Henschel in 1913

Later renumbered 30-35. Purchased new for service trains. An early memo specifically says these were to be ‘moguls’ *tipo DOP* [MOBR2401]. First three arrived Arica on SS *Holger* 20 June 1913, and remaining three on 24 August 1913 after the SS *Wiegand* had been wrecked in April and parts had had to be remade [MOBR2563].

–	11	‘21 de MAYO’ Chile	30	3231	w/n 11713	Hired to Bolivia around 1928, but then returned in 1929.
–	12	Chile then Bol.	31		w/n 11714	Later went to Bolivia and became no. 101 and later 503. Photo by D. Ibbotson in Chris Walker collection supposedly shows this loco at Cochabamba in March 1972, but identifies it as Henschel 11716 [R&AT website ref. cjwsam354].
–	13	Chile then Bol.	32		w/n 11715	Later went to Bolivia and became no. 102 and later 504.
–	14	Chile	33	3232	w/n 11716	
–	15	Chile then Bol.	34		w/n 11717	Later went to Bolivia and became no. 103 and later 505.
–	16	Chile	35	3233	w/n 11718	





High resolution drawing files are available from the Henschel museum in Kassel.

This one came by courtesy of Jens Schindler.

There has been much confusion over which of these locos were eventually transferred to Bolivia.

All except **34** were recorded in service on the Charaña to El Alto section around 1924. Nos. **30**, **33**, and **35** were the only three shown in the 1937 *FCALP* list [20], implying that the other three had by then been commandeered for use elsewhere and possibly had been transferred to Bolivia. [21] gives a rather different mixture of road and builders' numbers. [14] says that it was nos. **33-5** (w/n 11716-8) that became Bolivian nos. **503-5**.

More recently, in 2024, Sr. Felipe Radrigan has forwarded pages from the *FCALP* company's annual report for 1929. The image below, taken from those pages, shows that locos **32** and **34** were sold to Bolivia in 1928, but that no. **30** had also been hired to work there, and then in 1929 had been returned to Chile, with no. **31** being sold in its place.

Al 31 de Diciembre de 1927 el F. C. de Arica a La Paz, contaba con el siguiente número de locomotoras.

Existencia de locomotoras al 31 de Diciembre de 1927

De Maniobras	6
» Adherencia	26
» Cremallera	8
TOTAL	40

El 20 de Noviembre de 1928 fueron vendidas y entregadas a la Sección Boliviana las locomotoras Nos. 32 y 34, cuyos valores se registran como sigue:

	Valor Comercial	Descuentos	NETO
Locomotora No. 32	\$ 171.500,00	\$ 38.587,50	\$ 132.912,50
Locomotora No. 34	» 171.500,00	» 38.587,50	» 132.912,50
			\$ 265.825,00

Desde el 1.º de Septiembre de 1928 se arrendó a la Cia. Boliviana cuatro Locomotoras Nos. 17 - 18 - 38 y 30.

La existencia de locomotoras de la Sección Chilena del F. C.

EN 31 DE DICIEMBRE DE 1928

EN 31 DE DICIEMBRE DE 1929

De Maniobras	7	De Maniobras	6
» Adherencia	20	» Adherencia	21
» Cremallera	8	» Cremallera	8
Arrendadas a la Cia. Boliviana	4	Arrendadas a la Cia. Boliviana	2
TOTAL	38	TOTAL	37

Durante el año 1929 fueron devueltas por la Cia. Boliviana las locomotoras Nos., 30 y 38 continuando arrendadas las Nos. 17 y 18. Fué vendida a la Cia. Boliviana la locomotora N.º 31 en \$ 132.912,50.



Ex-FCALP Henschel 2-6-0 no. **15**, running as ENFE no. **505**, shunting at La Paz in 1975. Note the slightly raised running plate, and the steam/air-operated bell on the smokebox.



No. **35** runs down off El Morro at Arica, in an extremely rare photo, which conveniently shows the loco's number writ large on the side of the tender and with the initials FCALP above on the collar.

0-6-6-0 Mallet d/w 1105mm 43½", cyls 400&610x550mm, built by Hanomag in 1913

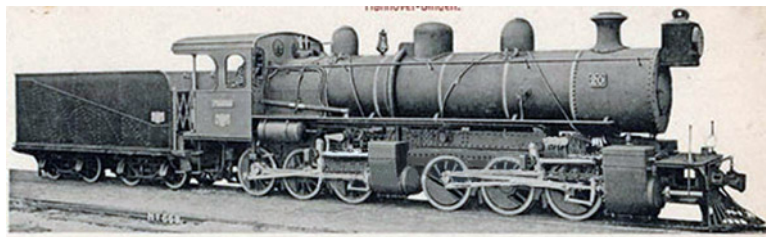
Purchased new for service trains. [14] says no. **20** was still named in 1955. Names from Herr Walter Thies of Bochum via the Hanomag Museum and Jens Schindler. NBL records held in Glasgow suggest that they too tendered for the building of these Mallets and also for the construction of 2-6-0s and 0-6-0Ts for this railway.

–	17 ‘ARICA’ Chile	20	3620	w/n 6776	Disgraced itself on an opening day train, 20th May 1913, when failed at Km. 49 owing to melted firebars [MOBR2509]. Hired to Bolivian end of railway in 1928-9. 1929 [58]: “ <i>Locomotoras Mallet Alemanas Nos. 20, 22 y 23., estan detenidas esperando reconstrucción y transformación a vapor recalentado. Los repuestos necesarios llegaron a Arica a fines de 1929, principiando en Noviembre del mismo año la reparación de la locomotora No. 23.</i> ”
–	18 ‘La PAZ’ Chile	21	3621	w/n 6777	Hired to Bolivian end of railway in 1928-9.
–	19 ‘VIACHA’? Chile	22	3622	w/n 6778	Jens Schindler's info from Hanomag Museum said ‘VACHA’ but ‘VIACHA’ is much more likely. 1929 [58]: “ <i>Locomotoras Mallet Alemanas</i>

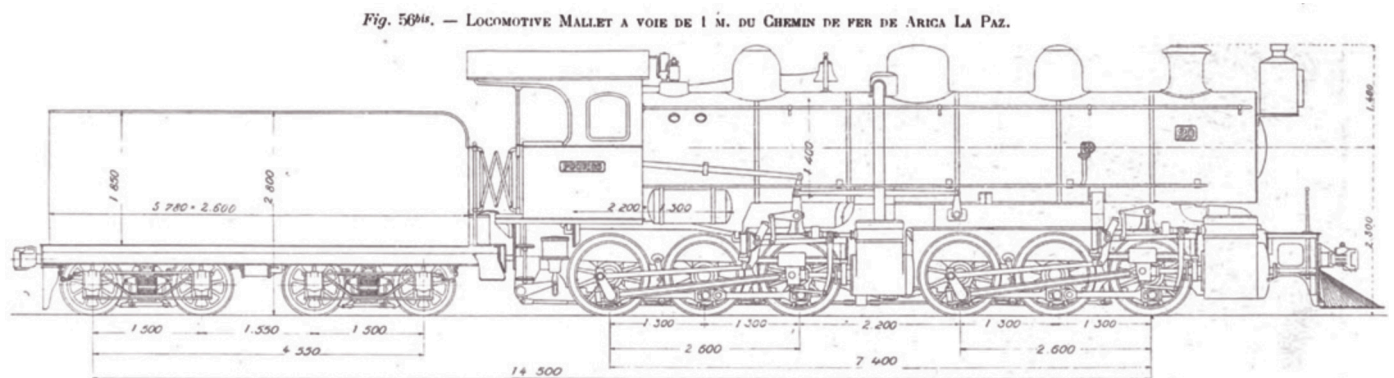
Nos. **20, 22 y 23.**, estan detenidas esperando reconstrucción y transformación a vapor recalentado. Los repuestos necesarios llegaron a Arica a fines de 1929, principi-
ando en Noviembre del mismo año la
reparación de la locomotora No. **23.**”

– **20 ‘PUQUIOS’** Chile **23 3623 w/n 6779**

Hanomag publicity card image (see below)
shows numberplate on smokebox side.
1929 [58]: “Locomotoras Mallet Alemanas
Nos. **20, 22 y 23.**, estan detenidas esperando
reconstrucción y transformación a vapor
recalentado. Los repuestos necesarios
llegaron a Arica a fines de 1929, principi-
ando en Noviembre del mismo año la
reparación de la locomotora No. **23.**”



Hanomag publicity card pic, via Jens Schindler.



Side elevation sketch from Lionel Wiener’s book *Articulated Locomotives*, published in 1930.

4z2-10-0T d/w 910mm, adh cyls. 390x500mm, rack cyls. 540x450mm, built by Esslingen/Sarrono in 1913

Purchased new for service trains. Arrived Arica on SS *Tanis* (1) and SS *Hermonthis* (2) in August 1913 [MOBR2563]. There must have been some difficulties when these locos first arrived, as the builders sent out an engineer, Herr Max Mayer, to investigate [MFER42]. These were effectively Mallets, with the rear set of adhesion driving wheels on a frame fixed rigidly in line with the boiler. The front rack bogie on the other hand, whilst supplied with high pressure steam, turned as would a normal Mallet’s low pressure bogie. These were later **22-4** (confirmed by Perruvian Corporation report around 1924), but what happened to them? Gone by 1926 according to ITN. Certainly not on 1937 *FCALP* list [20]. However, in 1920 new tube-plates were ordered for them so they must have still been in use at that point [MFER119]. A comment in the BLW spec sheets for the 2-8z2-2T loco purchased in 1916 states, “These engines (ie the Saronnos) have been in service over two years and no damage has been noted on rack. The objection to them is that they are too heavy and cumbersome in the shops owing to absence of crane or appropriate drop pits.” and “We wish to call Baldwin’s attention to the fact that the great trouble on the Mallet Esslingen locomotives is due to leaky steam pipes under air pressure, which produce all the brake failures on these locomotives. The small Esslingen,

not having flexible steam pipes, do not suffer from this defect.” [comments from Wessel Duval agents.]

- **21 ‘JOSÉ MANUEL BALMACEDA’** w/n 479
- **22 ‘JERMÁN RIESCO’** w/n 480
- **23 ‘DOMINGO SANTA MARÍA’** w/n 481



Esslingen builder's photo of no. **22 ‘JERMÁN RIESCO’**, as displayed in ads. by builder.



The only known view of an Esslingen 4z2-10-0T in service.

0-4-4-0 Three truck Shays d/w 36", cyls. 12"x15", built by Lima in 1907

Ordered by the *Sindicato de Obras Publicas*. Purchased from later contractors, see above. Their numbers may have dated from their first owner, the *SOP*, however a photo taken early during the Sir John Jackson (Chile) Ltd. contract shows one of these bearing the number **6** on a smokebox number-plate [29], and with no visible name-plate.

6	30	?	w/n 1914
7	31	?	w/n 1915

0-6-0T d/w 736mm 29", cyls. 262x357mm 10¼"x14", built by Borsig in 1908

Ordered via agents Gleisner of Hamburg. First owner uncertain, but [16] says was used on *FCALP* construction and later became *EFE 3130*. May well have been ordered by the *SOP*, but seems likely not to have arrived before the cancellation of their contract. Was recorded as inspected and ready for delivery from Borsig in September 1908, along with the three 2-8-0s which see below.

?	1	w/n 6777	Survives at Arica, in the old <i>FCALP</i> station.
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Photo from R&AT website, taken by R. Pelham in 1993.

4-6-0 d/w 1016mm 40", cyls. 406x457mm 16"x18", built by Lever Murphy in 1899/1900, 'Carga, con tender'.

See the second *DOP* section (section 3.1.10) for details of this class of engines.

23 'FEDERICO ERRÁZURIZ'

This one had worked in the La Serena area from new, was recorded in service there in 1905-6 and was then to be sent via the steamer 'Olivant' to Arica for construction duties during 1909. As it was recorded derelict there in 1955, it seems likely that it had spent the remainder of its life on the *FCALP*. However, it was not listed in the inventory at the end of Sir John Jackson's contract in 1913.

?-?-?T? d/w ?, cyls. ?, built by ? in ?

Ordered for ? At present there is no indication as to what this locomotive might have been. It might have been the Lever Murphy 4-6-0 no. 23 as listed above, but renumbered into the 1926 number series. However, when seen lying derelict in 1955 that engine was still bearing the number 23.

?	39	w/n ?	1929 [58]: " <i>Locomotoras(sic) No. 39., conviene darla de baja por ser chica y anticuada. Su reparación costará mas que el rendimiento que pueda de ella obtenerse. "</i>
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Puzzling work done in Panama

A report from the Panama Canal Company to the governor of the canal zone in 1916 records various outside contract work done once the canal had been completed and the internal workload had diminished. The extract reproduced below states that six cast steel frames (for rack locos) had been completed for the *FCALP*. This is puzzling, because at that time the railway possessed two Esslingen 0-8z2-2Ts, the three unsuccessful Esslingen/Saronno 4z2-10-0Ts, and the one brand new Baldwin 2-8z2-2T listed below. It is highly unlikely that such major work was needed on those widely differing designs at the same time, even if the reference was to rack pinion sub-frames rather than to the frames of the entire locomotives. Alternatively, the *Red Central Norte* owned another six very similar Esslingen 0-8z2-2Ts, and it is possible that the work had been ordered jointly by both railways together.

the Panama Railroad, 5 for the Army, 8 for the Navy, 4 for individuals and companies, 7 for the east breakwater, and 2 for the Panaman Government.

Work done for individuals and companies included extensive repairs to the boilers of the steamships *Whitgift* and *St. Louis*, to the rudder of the *Curaca* and to the stern of the *Elm Branch*. Three manufacturing orders of considerable magnitude were accomplished for the Ferrocarril de Arica a La Paz, consisting of six cast-steel frames for geared mountain climbing locomotives, 3,000 semisteel rail chairs, and 16 steel gears for use on locomotives.

For further details, and a statement of the amount of work done during the year by the various shops, attention is invited to Appendix F.

Later acquisitions:

0-8z2-2T rapidly modified to 2-8z2-2T d/w 940mm 37", cyls. 483x508mm 19x20", rack cyls. 432x457mm 17x18", built by Baldwin in 1916

Short side tanks with sloping top line. This loco had a boiler sloping forward in the fashion common to pure rack locos. The rack pinions were between the first and second driven wheelsets as the long gap suggests. This loco was built as an 0-8-2T, is listed as such in Connelly's Baldwin list, and was Baldwin class 10 28/32 1/3 CE1, which confirms that it had a total of ten wheels when first built. However, a note in the specification sheets, in vol. 54 p396 part 2, says "Two wheeled front truck, ordered through the Extra Work Dept., order no. 6812 dated 6.27.16 was applied by B.L.W. to correct distribution of weight." This probably occurred before the loco left the Baldwin works. Loco fitted with Le Chatelier counter-pressure brakes on both adhesion and rack engines.

24 Chile **75** **3355** w/n 43337 [32] says ran 17,125km in 1929. Shown in 1937 *FCALP* list [20].



No. 24 seen in BLW builder's photo; hi-res versions are available from the Pennsylvania Railroad Museum.



The same loco as later numbered **75**, and with additional air tank or counter-pressure brake header tank on boiler top, handrail along running plate and tanks, and with full height oil tank in bunker.

0-6-6-0 Mallet d/w 1105mm 43½", cyls. 406&635x548mm 16&25x21½", built by Baldwin in 1918

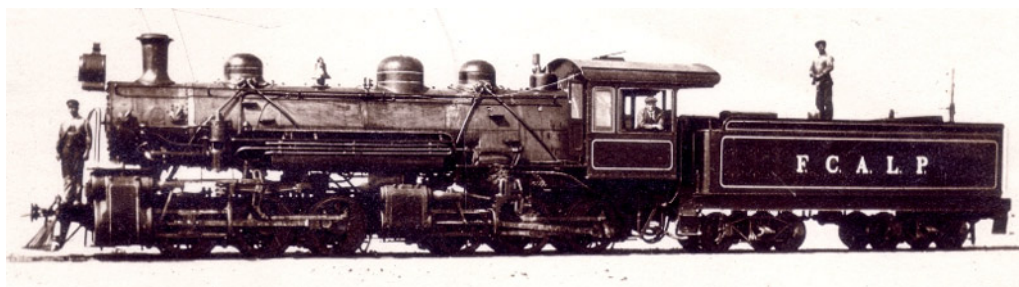
Works numbers may not match road numbers as below. BLW class 12-20/32DD. Spec is in vol. 66 p390+. A photo seems to show one of these locos carrying a long three-word name on a cabside plate.

? '?' Chile **25** **3625** w/n 48195

? '?' Chile **26** **3626** w/n 48196

25 '?' Chile **24** **3624**? w/n 48219 BLW class 12-26/44DD no. 33.

The above three Baldwins became *FCALP* **21-3** for a while after the Saronno 4z2-10-0Ts were out of use, and then later became EFE **3624-6**.



The letter dated 23rd July 1920 mentioned above, also refers to "*Las Planchas tubulares de las locomotoras Mallet Baldwin Nos. 10 i 11 que tenemos en servicio tienen solamente 3/4" de grueso, por esta causa no ofrecen la resistencia suficiente cuando se expanden los tubos grandes de los recalentadores y han cedido los agujeros hasta el extremo que los puentes entre agujero y agujero se han debilitado de manera que habra que atender antes de ocho meses a la renovacion de este material. Las dos planchas que hai que comprar deben tener una pulgada de grueso en la parte donde van los tubos y su costo aproximado es de . Pueden encargarse directamente a la fabrica Baldwin.*" Which were Mallet locos nos. **10** and **11**? If they were amongst the 1918 batch, 1920 would seem very soon to be worrying about replacing superheater flues.

2-8z2-2T d/w 940mm 37", cyls. 483x508mm 19x20", rack cyls. 450x450mm 17x18", built by Baldwin in 1920 (26) and 1923 (27)

Second loco had cyls. 19x20" and 18x18". Long side tanks with horizontal top line and with bottom line sloping up at front. BLW class 12-28/32¼CE no. 4 and class 12-30/32¼CE no. 1. Second one was ordered 6th July 1923 at a price of \$46,250, to be completed within five months, and delivered to Arica in 45 days more. The boilers were on the level, unlike no. **24/75**, and the rack pinions were between the second and third driven wheelsets. They were similar, but the second loco had slightly larger diameter rack cylinders, and also a Worthington feed pump mounted on the front footplate. The rack gears were not to be as hard as on the first engine, as that caused excessive wear on the rack.

26 '?' Chile **76** w/n 52814

No name visible in builder's spec sheets. Builder's photo seems to show original running number was **20**. Had plate BLW extra order rebuild 1249 of 8/27.

27 'FRANCISCO MARDONES' Chile **77** w/n 57078

These were sold to the EFE in 1927 to overcome a shortage of rack power on the *Longitudinal Sur*.



No. 26 seen in BLW builder's photo; hi-res versions are available from the Pennsylvania Railroad Museum.

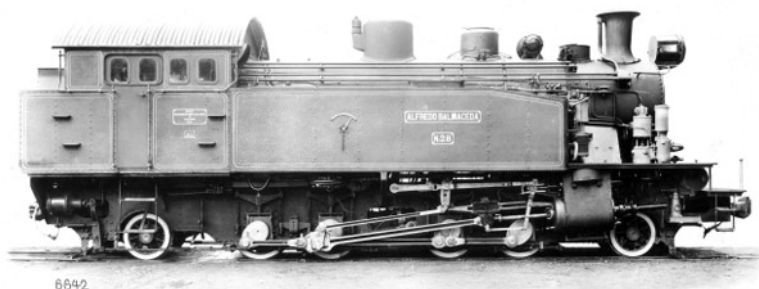
2-8-2-2T d/w 940mm 37", cyls. 500x500mm, rack cyls. 450x450mm, built by Esslingen in 1923

Later renumbered 78-79. Order was placed on 6th July 1923 (same day as previous order above) at a price of £8,035 (difficult to read with certainty), completion to be within ten months and delivery to Arica in 45 days more.

28 'ALFREDO BALMACEDA' Chile 78 3315 w/n 4127 Survives in Arica, but wrongly numbered 3331.

29 '?' Chile 79 3316 w/n 4128 [32] says ran 12,314km in 1929.

Both shown in 1937 *FCALP* list [20].



0-6-4T d/w 1057mm 41½", cyls. 381x457mm 15"x18", built by Hunslet in 1910

Ordered for Chilean Longitudinal Railway as no. 7. Sold to *FCALP* in 1923. [20] says d/w 36½".

Chile 4 3027 w/n 1057

0-6-0T d/w 810mm 32", cyls. 280x410mm 11x16", built by ALCo-Cooke in 1919

Ordered as 750mm gauge locos for the Russian City & Towns Union. Not delivered, and eventually regauged and sold to *FCALP* in 1926. Order from *FCALP* was placed on 18th February 1926, at a price of \$6,500 each. 1937 *FCALP* list [20] gives works number of one as 58954. Connolly's ALCo list also shows 58954-5 as the ones that came to the *FCALP*, though 58965-6 were sold on elsewhere via W. R Grace & Co as were 58956, 58969, 58975-6 and 58981. [20] gives cyls. as 280x410mm.

Chile 5 3140 w/n 589??

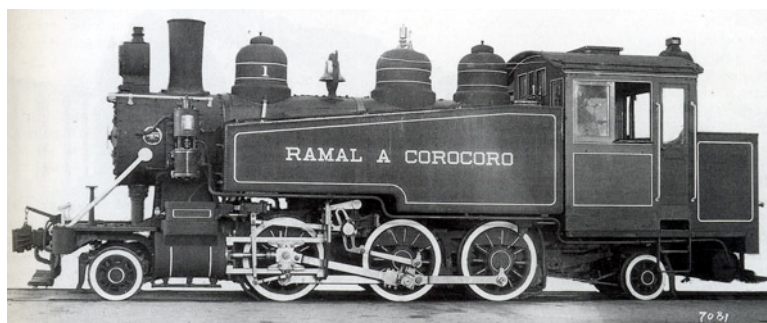
Chile 6 3141 w/n 589??



2-6-2T d/w 44" cyls 16x20" built by Baldwin in 1919

Ordered for the Bolivian Government via Chandler & Co. The BLW spec sheet for loco 10 26¼D no. 148 (vol. 66 pp376-7) confirms that this loco was ordered by the Bolivian Government, and was to be lettered 'RAMAL A COROCORO' on the tank sides with front number-plate, sand-dome and rear of bunker showing the number '1'. The tanks were to "taper to front end to allow engineer to see, then moved to the FCVAe track ahead". Corocoro was a copper mining area south of La Paz accessed by a branch diverging from the *FCALP* at Tajeyra. However, Mike Page's list in SLS file L9028, and in [23], says that the engine was sold or transferred to the *FCALP*, later passing on to the *FCB/ENFCB* as their **104** and eventually **506**. Whilst this loco has been included here for the sake of completeness, it probably spent its whole life within Bolivia rather than Chile.

1 w/n 51870



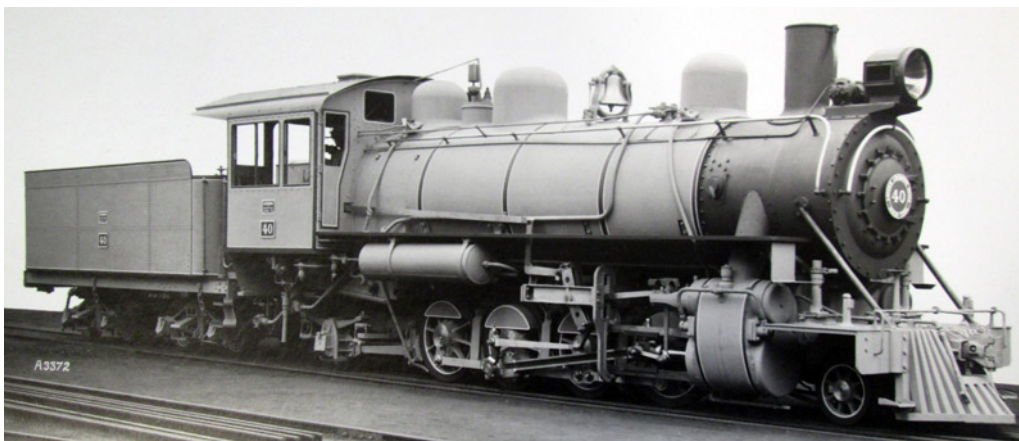
Baldwin builder's photo, via Binns & Walker's *Railways of Bolivia* book.

2-8-2 d/w 1105mm 43½", cyls. 495x560mm 19½"x22", built by Borsig in 1925

EFE tipo W. Order placed 30th August 1924 at a price of £4,600 each. Completion was to be within six months, and delivery at Arica in two months more. It may be this contract that was reported in UK newspapers as follows: "The FBI's correspondent in Chile reports that recently tenders were called for three locomotives of the Mikado type for the Arica-La Paz Railway. Hitherto the Chilean Government has always obtained these locomotives at the lowest cost from the United States, but the tenders offered in the present instance disclosed a position which is of considerable interest as showing the competitive prices. The figures were, roughly, as follows:- Belgian manufacture...£4,700 (per locomotive); German manufacture... £4,756; USA manufacture... £7,550; British manufacture... £9,260. This was the cheapest British tender, and illustrates only too graphically the chances the British manufacturers have of doing business in the engineering line in South America." [*Sheffield Daily Telegraph*, also in *The Scotsman*, and other UK papers, August 1924].

Chile	40	3570	w/n 11861	Second sand-dome later moved forward of steam dome, and bell moved to vacated position in front of cab. 1929 [58]: " <i>Locomotora Mikado No. 40., accidentada en Huaylas, se encuentra en las mismas condiciones que al 31 de Diciembre de 1928, esperando reparación.</i> "
Chile	41	3571	w/n 11862	
Chile	42	3572	w/n 11863	
Chile	43	3573	w/n 11864	43 or 45 derailed and rolled at some point in 1940s. Survives at Baquedano.
Chile	44	3574	w/n 11865	
Chile	45	3575	w/n 11866	43 or 45 derailed and rolled at some point in 1940s. Second sand-dome later moved forward of steam dome, and bell moved to vacated position in front of cab. Same pic shows air pump on right side of boiler.

All six shown in 1937 *FCALP* list [20].



A Borsig builder's photo of no. **40**, from the P. C. Dewhurst archive.



No. **41** at Maestranza Puquios in 1938, already with its rear sand-dome moved forward of the steam dome.



No. **43** or **45** inverted after a derailment during the 1940s.

2-8-2zT d/w 940mm 37", cyls. 500x500mm, rack cyls. 450x450mm, built by Esslingen in 1925 (80-82), 1927 (83), and 1950 (3330-3332)

The first of these was ordered on 15th December 1924 at a price of £8,035, and the next two on 8th May 1925 at a slightly reduced price of £8,000 each. The later locos built in 1930 (for the *EFE*) and 1950 for the *FCALP*) were identifiable by their longer domes

Chile	80	3317	w/n 4153	<i>Tipo Uc [32] says ran 19,836km in 1929.</i>
Chile	81	3318	w/n 4154	<i>Tipo Uc [32] says ran 19,604km in 1929.</i>
Chile	82	3319	w/n 4155	<i>Tipo Uc [32] says ran 21,087km in 1929.</i>
Chile	83	3320	w/n 4188	<i>Tipo Uc [32] says ran 15,065km in 1929.</i>

All shown in 1937 *FCALP* list [20].

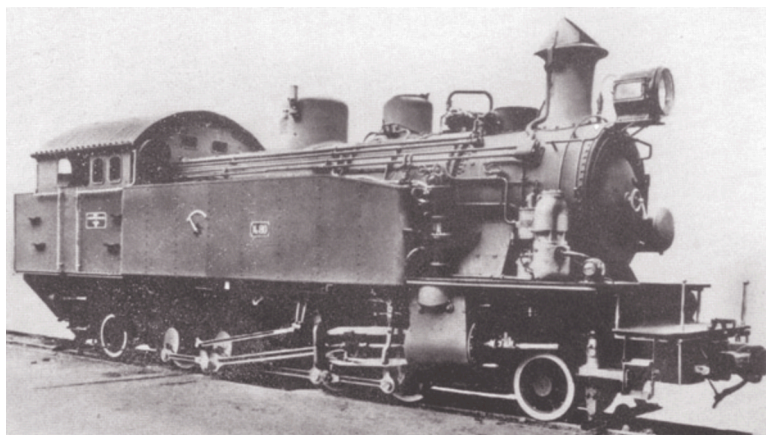
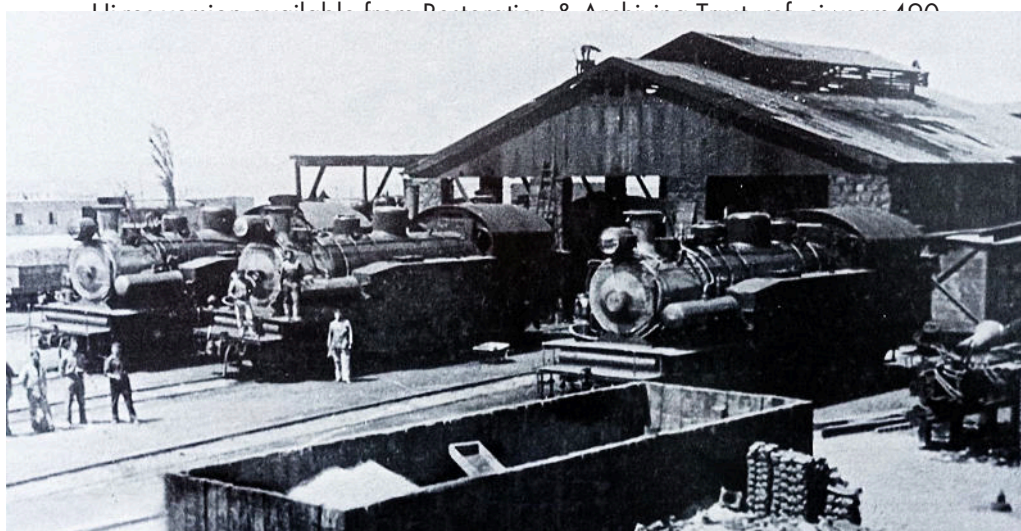


Photo of no. **80** from Christopher Walker's collection.



Three *FCALP* Esslingen 2-8-2Ts await their turns on the rack, probably at Estacion Central, around 1949.

Changes in the 1920s

Control of the Arica-La Paz was divided between Chile and Bolivia about 1926, and a new roster was organized. The 1930 US report [15] suggests that around 1928 the Chilean part of the railway had 40 locos of which 34 were in use: 6 being shunters, 8 rack locos, and 26 adhesion line locos.

On 2nd February 1927 \$200,000 (pesos) were to be paid to the *FCALP* for two Baldwin rack locos sold to the *EFE* for use between Pedegua and Petorca [MOBR2248].

26 later **76** w/n 52814

27 later **77** w/n 57078

The railway's annual report 1929

“En 1928 y a principios de 1929 el estado de las locomotoras se presentaba satisfactorio en la Sección Central-Púquios (cremallera) y Púquios-Gharaña, no así en la Sección Arica-Central, cuya situación tuvo que afrontarse con las locomotoras «Mallet Americanas en deficiente estado de conservacion y en circunstancias que el tráfico se incrementaba apreciablemente.

*Debido a la estrechez de locomotoras en la Sección Arica-Central se inició la reparación de la máquina No. **21** «Mal-*

let» Alemana, el 18 de Mayo de 1928 y se terminó el 10 de Abril de 1929. Una vez en servicio, permitió la reparación general de las locomotoras «Mallet Americanas, principiándose por la N.º 26; a todas estas locomotoras se les cambió el fogón, resultando que algunos marcos estaban quebrados, lo que complicó las reparaciones. Posiblemente en el curso del año 1930 podrá contarse con las tres locomotoras «Mallet» Americanas, en buenas condiciones y dos locos «Mallet» Alemanas reconstruidas y modernizadas a vapor recalentado.

Se ha dado toda importancia al cambio de fogones de cobre, tanto en los calderos de cremallera como en los locos «Mikado».

Con las medidas tomadas se ha podido atender en todo momento al arrastre oportuno de la carga y se ha asegurado para el futuro una situación holgada en cuanto a tracción.”

The report also included a table listing all the engines in service together with the kilometres covered during the year. From this table it was clear that the numbering system had been intended to divide the fleet into three separate categories:

<i>Maniobras</i>	1, 2, 3, 4, 5, 6
<i>Adherencia</i>	19, 21, 24, 25, 26, 30, 33, 35, 36, 38, 41, 42, 43, 44, 45
<i>Cremalleras</i>	75, 76, 78, 80, 81, 82, 83

Summary of fleet in 1937

An *FCALP* summary sheet – sent to SLS librarian by *FCALP* chief engineer in 1937 (in SLS Library file L2062).– lists the following engines:

No.	Tipo	Fabricante	No. de fabrica	Año
1	0-6-0	A. Borsig	6777	
2-3	0-6-0	R.W.Hawthorn Leslie	2874-5	
4	0-6-4	The Hunslet Engine	1057	
5-6	0-6-0	The American Loc. Works	58954	
17-19	4-8-0	R.W.Hawthorn Leslie	2814-2822-2813	
20-23	0-6-6-0	Hanomag Mallet Alemana	6776-6779	
24-26	0-6-6-0	The Baldwin Loc. Works	48195-48197	
		Mallet Americana		
30, 33, 35	2-6-0	Henschel “Mogul”	11713-11718	
36-38	2-8-0	Consolidada Borsig	7109-7110-7111	
40-45	2-8-2	Borsig Mikado	3501-3510 (Sic, but incorrect)	
75	2-8zz-2T	Baldwin	43337	
76	0-8zz-2T	Esslingen	3561	
78-79	2-8zz-2T	Esslingen	4127-4128	
80-83	2-8zz-2T	Esslingen	4153-55 & 4188	

Total number shown is 36.

The above information begs the question as to what were the missing numbers, ie.

7-16		
27-29		
31-2, 34	2-6-0	Henschel
39		
77	0-8zz-2T	Esslingen 2562 Accident victim. Never recovered.

For further information regarding rack locomotives after the takeover by the EFE in 1953, please see section 3.2.5 later in this document

1949 and 1955 information

In 1949 the *FCALP* was shown in the annual *EFE memoria* to have 30 steam locos in use.

A visit to the Chilean *FCALP* by David Ibbotson in 1955 showed that other locos from the general *EFE* list had been used here and were present at that time:

<i>Tipo A</i>	0-6-0TT	3012-3013
<i>Tipo F</i>	0-6-4T	3031, 3060-3061
	0-6-0T	3130, 3132, 3133
	2-6-0	3210 of unknown origin
<i>Tipo Vr</i>	2-8-2T	3408, 3409, 3410
<i>Tipo SF</i>	2-10-2	3709-3710

and there was a scrapped tank engine, no. **23 ‘FEDERICO ERRÁZURIZ’**. This was probably one of the *tipo* M 4-6-0s by Lever Murphy which had that number and name. This loco had been used by the *DOP* for some years but was to be delivered to Arica from Coquimbo in 1909. Whether a mistake had been made in passing or whether this loco was indeed rebuilt as a tank loco is unknown.

There was a complete separation of the two national sections about 1955. The *FCALP* had worked the Villazon-Atocha Ry. in Bolivia from about 1945. Ex *ENFB* locos and new purchases for the Bolivian part of the line have not been listed here.

New ‘tipos’ after the merger into the *EFE*

The Chilean part of the *FCALP* was merged into the *EFE* in 1953. From then on locomotives were classified according to the *EFE*’s standard *tipos*, with those classes that were new to the *EFE* being given letters that had become defunct on the rest of the system. Thus *tipos* *I*, *L*, *M*, and *N* were resurrected.

A puzzle

The lists above show both Esslingen and Baldwin rack locos numbered as **76** and **77** in the 1920s. Is this merely a mix-up or did that really happen?

3.1.7 El FC Iquique a Pintados

Background

1000mm gauge. Authorised 1914, completed 1928. List of locos in 1931 in [11]. Initially supervised by the *Ministerio de Fomento*, but taken over by *EFE* in November 1943. In 1951 the *FCIP* took over the Nitrate Railways and the whole lot was merged with the *Longitudinal Norte* in 1961.

Koppel shunters

2-6-0 d/w ?, cyls. ?, built by O&K in 1910

550HP 43.2/42.2/36T delivered to *DOP* bearing nos. **21-26**. Several of those are mentioned later with numbers, **21**, **60**, **61**, and possibly **69**. The 1931 railway annual report lists nos. **1**, **2** and **21** as *Koppel de maniobras*.

1	w/n ?	
2	w/n ?	List of repairs required around 1919 is in [MOBR2972].
21	w/n 3971?	Ex <i>DOP</i> fleet. Definitely on <i>FCIP</i> in 1930.

Baldwin shunter

Not yet identified. This might have been one of the *Sindicato de Obras Publicas* 2-6-0 locos bought for the building of the *FCALP*, see above, and then passed on to the *DOP* and to the contractor Sir John Jackson (Chile) Ltd. One of these was photographed on the *FCALP* around 1909-1910 carrying the number **4**.

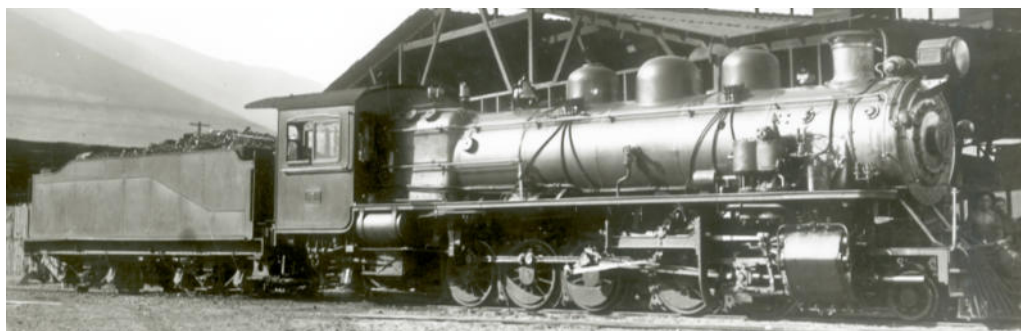
4	w/n ?
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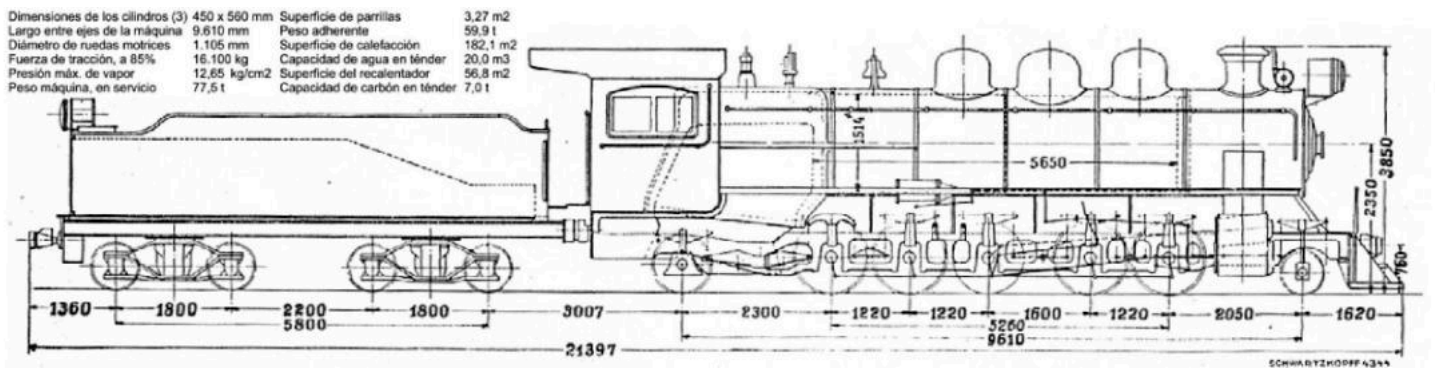
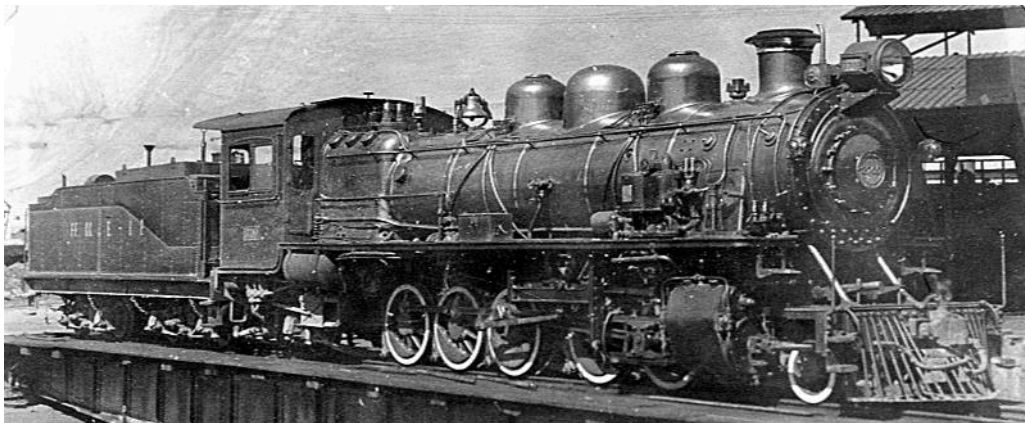
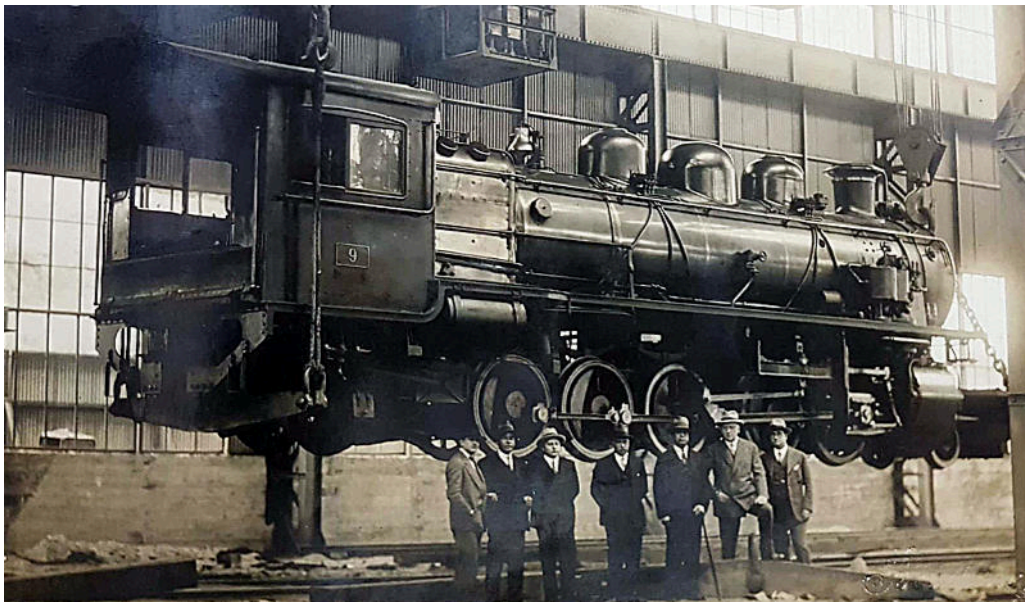
Tipo SF

2-10-2 d/w 1105mm 43½", cyls. 480x560mm, built by Berliner/Schwartzkopf in 1928

Ordered for the FC Iquique a Pintados. The precise number of these locos supplied is not certain, though it was probably only five as that is the number shown in the 1931 annual report and also in a 1946 *FCIP* diagram book. However, Jens Merte's Schwartzkopf/BMAG list shows numbers 9223 to 9229 as *FCIP* nos. **4-10**, whilst Jens Schindler's list shows 9223 to 9234 as *FCIP* nos. **1-12**, and with an additional loco 9712 having been cancelled. Merte's list has a large number of unused numbers, including above 9229 and around 9712, so it is not possible to rule out such numbers as it would be if they matched engines supplied to other railways.

4?	3704? w/n 9223?	
5?	3705? w/n 9224?	
6?	3706? w/n 9225?	
7	3707 w/n 9226	On <i>FCIPH</i> in 1961.
8	3708 w/n 9227	
9	3709 w/n 9228	At Arica on <i>FCALP</i> in 1955. On <i>FCIPH</i> in 1961.
10	3710 w/n 9229	At Arica on <i>FCALP</i> in 1955. 3711 supposedly on <i>FCIPH</i> in 1961, but may be a mistake for 3710 .
11	3711 w/n ?	





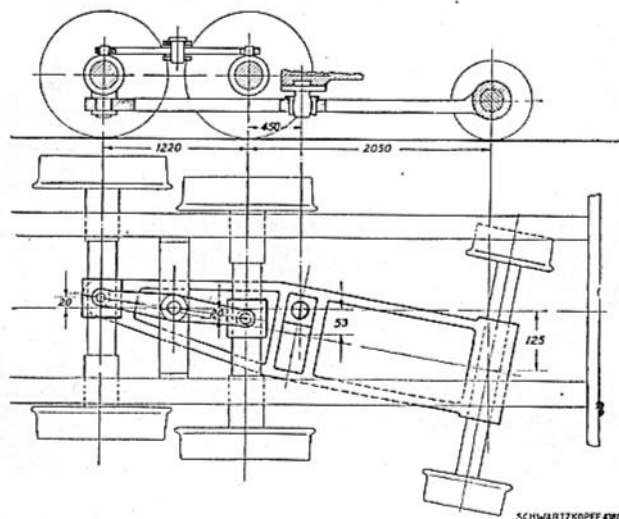


Fig. 12 Esquema del bogie patentado "Schwartzkopff"-Eckhardt"

2-6-0 d/w 1100mm, cyls. 360x550mm, built by Borsig in 1905

340 'RODULFO A. PHILIPPI' 3110 w/n 5566

In use by *DOP* 1910-4 on Choapa to Salamanca line construction, and by *DOP* on Iquique to Pintados line in 1919 [MOBR2972], and 1930 [1]. Was in *FC Iquique a Pintados* fleet in 1931 [11] when the annual report said: "*La locomotora No. 340 tuvo una reparacion general cambiando el combustible de carbón a petróleo al igual que la No. 1. Hubo de hacerse este cambio para que pudieran tener acceso a las Bodegas de salitre donde es peligroso la combustion a carbón.*"

Grupo 14, later tipo L

2-6-0 d/w 1066mm 42", cyls. 381x457mm 15"x18", built by Baldwin

BLW class 8-24D no. 131, no name or number given on spec sheet.

8 50 46 46 3046 w/n 25022 of 1/05.

ex no. **492**. Working on branch to Huasco and Pedro L. Gallo in 1919 [5]. In use by *DOP* on Iquique to Pintados line in 1930 [1]. '*Prestan servicio en Refuerzo de Puentes, desde octubre de 1942*' through to 1951 at least.

4

Listed in 1931 annual report as if equivalent to no. **3046** above.

In 1930 metre gauge 2-6-0s Nos. **21**, **60**, **61** and **69** were in use by the *DOP* on this line [1]. **21** is as above, ie. one of the *DOP*'s O&K locos, whilst **60** and **61** were from the same batch but renumbered as confirmed in [MOBR2972]. No. **69** has not yet been identified.

Transfers from the FCNC

The following groups of locos were transferred from the *FC Norte Chileno* by decrees of 1935 and 1937 [MFOM1383]:

0-6-4T d/w 863mm 34", cyls. 381x457mm 15"x18", built by Hunslet in 1911

Ex *FCNC*.

3 'MARÍA' 903 w/n 1065

Transferred to *FCIP* by decree of 11 November 1935 [MOBR 1393]. Became *EFE 3060*.

4 'EDITH' 904 w/n 1078 Transferred to *FCIP* by decree of 11 November 1935 [MOBR 1393]. Became *EFE 3061*? HT says this was Hunslet 1076.

2-6-0 d/w 1080mm 42½", cyls. 410x560mm, built by Henschel in 1911

Delivered originally to 'Chilian Longitudinal Bahn' (ie. the *FCNC*). Most locos later transferred officially to the *FCIP* had actually moved there as early as 1919 [MOBR2972].

5	1005	w/n 10702	Transferred to <i>FCIP</i> by decree of 22 January 1937.
6	1006	w/n 10703	Transferred to <i>FCIP</i> by decree of 22 January 1937.
7	1007	w/n 10704	Transferred to <i>FCIP</i> by decree of 11 November 1935.
8	1008	w/n 10705	Transferred to <i>FCIP</i> by decree of 11 November 1935.

Grupo 23, later tipo ? [5]

2-6-0 d/w 1105mm 43½", cyls. 450x600mm, built by Henschel in 1911

Most locos later transferred officially to the *FCIP* had actually moved there as early as 1919 [MOBR2972].

11	1011	w/n 10971	Transferred to <i>FCIP</i> by decree of 11 November 1935.
17	1017	w/n 10977	Transferred to <i>FCIP</i> by decree of 11 November 1935.
18	1018	w/n 10978	Transferred to <i>FCIP</i> by decree of 11 November 1935.
20	1020	w/n 10980	Transferred to <i>FCIP</i> by decree of 22 January 1937.

2-6-0 d/w 1105mm 43½", cyls. 450x600mm, built by O&K in 1912

Some locos later transferred officially to the *FCIP* had actually moved there as early as 1919 [MOBR2972].

22	1022	w/n 5202	Transferred to <i>FCIP</i> by decree of 22 January 1937.
24	1024	w/n 5204	Transferred to <i>FCIP</i> by decree of 22 January 1937.
26	1026	w/n 5206	Transferred to <i>FCIP</i> by decree of 22 January 1937.
28	1028	w/n 5208	Transferred to <i>FCIP</i> by decree of 22 January 1937.
30	1030	w/n 5210	Transferred to <i>FCIP</i> by decree of 11 November 1935.

Locos present in late 1930s and into the '40s

Source [11] states that there were 5 2-10-2s, 13 2-6-0s, and 5 shunters (including those mentioned above).

Two of the 2-6-0s were ordered to be sent to the *FCTC* in 1944, and numbers **3225** and **3227** went to the *Red Sur* in 1945 [11]. The latter ended up on the Los Lagos to Ríñihue line.



A scene at the roundhouse of the *FCIP*'s Maestranza El Colorado in Iquique during 1936.

The locos include, from left to right, (1st) a Berliner 2-10-2 of tipo *SF*, (2nd) unidentified, (3rd) a Hunslet 0-6-4T (one of nos. **901-4**) of the *FCNC*, (4th-6th) probably Henschel and O&K 2-6-0s ex *FCNC* later tipo *T*, (7th-9th) three more tipo *SF* 2-10-2s.

The fleet in later years

A 1944 *memoria* states that the *FCIP* had 23 steam locos in service and three more dismantled that had been used during the railway's construction. These comprised five *tipo SF*, thirteen moguls and five shunting engines. One *tipo SF* and four moguls had been converted to oil fuel. However, two moguls, one in good condition and one requiring repairs, were to be sent to the *FC Trasandino* during December 1944.

In 1949 the Annual *EFE memoria* showed the *FCIP* as having 19 steam locos in use, implying tht another two had been withdrawn or sent elsewhere during the preceding five years.

The merger with the *FCNC* in 1961

Once the *EFE* took over the running of the *FCNC*, it was operated jointly with the *FCIP* under the name *FC de Iquique*.

3.1.8 *El FC Trasandino por Antuco* – *El FC de Monte Aguila*

Background

This was the erstwhile and optimistically named *FC Trasandino por Antuco*, running 71km from Monte Aguila on the broad gauge mainline south of Chillán, east to Trupan and Polcura. It was taken over by the *EFE* in 1943. “*Hai tres locomotoras de tres ejes coplados, con tender*” [7]. The 1930 US report also says that there were three locos.

0-6-2T d/w 44", cyls. 12"x18", built by Baldwin in 1905

1 ‘JOSÉ MANUEL BALMACEDA’ w/n 25997

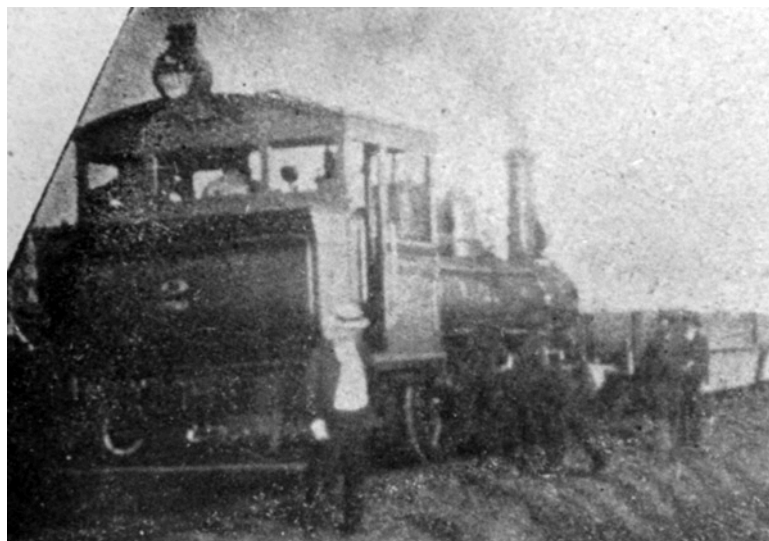
Later became *EFE* 3121.

2 ‘JOSÉ IGNACIO VERGARA’ w/n 26016

Later became *EFE* 3117. SLS file L8434 contains a note suggesting that this loco may have carried worksplate 25997 in error.



Hi-res images available from the Railroad Museum of Pennsylvania, image nos. BLW-neg-02046-1-cat.jpg and BLW-neg-02047-1-cat.jpg



Strangely, this photo of loco no. 2 appears to show it without side tanks.
Image provided by Señor Pablo Moraga.

The third loco

No details are known for loco 3. It may have been similar to the others but has not been found in the BLW list. A very poor photo taken during the construction period showed a French style 0-6-0 tender loco with a forward-mounted dome crossing a stone bridge [*Zigzag* issue 184]. However, this may have been a contractor's engine.

3 w/n ?

Later became *EFE* 3116.



The fleet in 1909-1911

The government annual publications *Estadística de los Ferrocarriles Particulares en Explotación* state that the railway had three locos in operation during these years.

Later motive power on this railway

After the takeover by the *EFE* in 1943 heavier locos were brought in, though the original engines continued to work there. A 1952 loco type haulage capacity chart suggests that *tipos G and H* had arrived by then. Judging by the permitted load table the *tipo G* was the single Hudswell Clarke 0-4-0ST originally known by that designation rather than the Hanomag 2-6-0s which later took the title. The *tipo Hs* were 2-6-0s built by Borsig.

Baldwin drawings

The collection of Baldwin drawings at the deGolyer Library, Southern Methodist University, includes side elevation (SE) or cross section (CS) drawings for one design built for the *FC Trasandino por Antuco*.

Index#	DWG#	Tracing#	Road name	Road#	Date	Baldwin class	Number	Wheel	Dwg typ	Size
468-73	5110	-	Trasandino Por Antuco	1-2	1905	08-18 1/3 D	10-11	0-6-2	SE/CS	3

The list of drawings in which these details were found is at <https://www.smu.edu/~media/Site/Libraries/degolyer/pdf-s/BLW-EDWG-RoadName.pdf> whilst arrangements to purchase copies can be found at <https://www.smu.edu/libraries/degolyer/Research/Permissions>

3.1.9 *El FC Trasandino por San Martín*

Background

Metre gauge, 40 km. long. Collilelfu / Los Lagos to Riñihue. Originally it was intended that this be the first of several stages in the creation of a Trans-Andean route, several isolated railways initially being linked by ferries on the various lakes until the intervening rail sections could each be built. However, this was the only section to be actually completed. Taken over by *EFE* in 1943. Three locos in total.

0-4-0TT d/w ?, cyls. ?, built by Hanomag in ?

Best guess is Hanomag 4695 of 1906, supplied via R. Dolberg of Hamburg. Correct gauge and date, and clearly the 0-4-0T loco on this railway bears Hanomag styling cues, but no other clues. Hanomag produced relatively few metre gauge industrials. A very similar, though not identical, 900mm gauge loco illustrated on a Hanomag publicity card had d/w 820mm, and cyls. 310x440mm, with a service weight of 18.8 tonnes. Alternatively Jens Schindler suggests this engine may have been Hanomag 4673 of 1906.

‘SAN MARTÍN’

w/n ?

Later became *EFE* 3118.

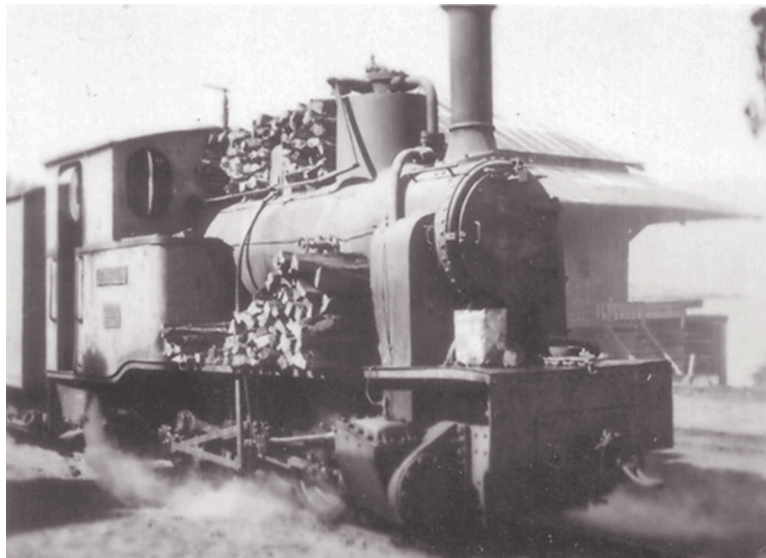


Photo seems to have been taken at Riñihue station. Provided by courtesy of Pablo Moraga.

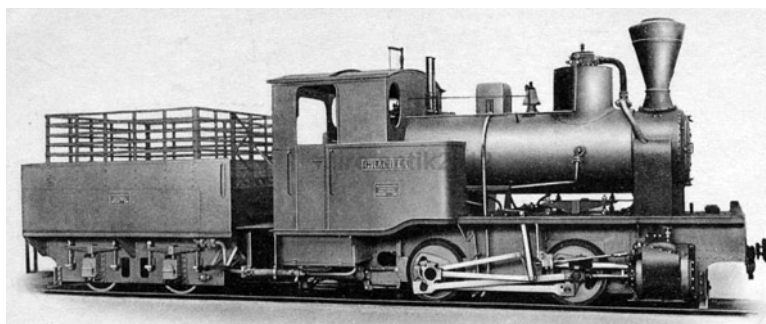


Image from a Hanomag catalogue. Note the different chimney.

0-6-0T d/w ?, cyls. ?, built by Borsig? in ?

Possibly Borsig 6777? and 8235.

‘COLLILELFU’

w/n ?

Later became *EFE* 3119.

‘GRACIELA’

w/n ?

Later became *EFE* 3120.

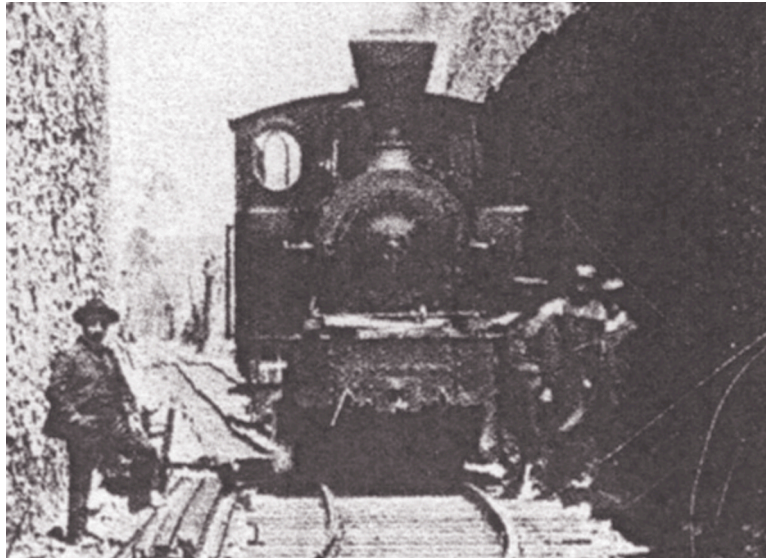
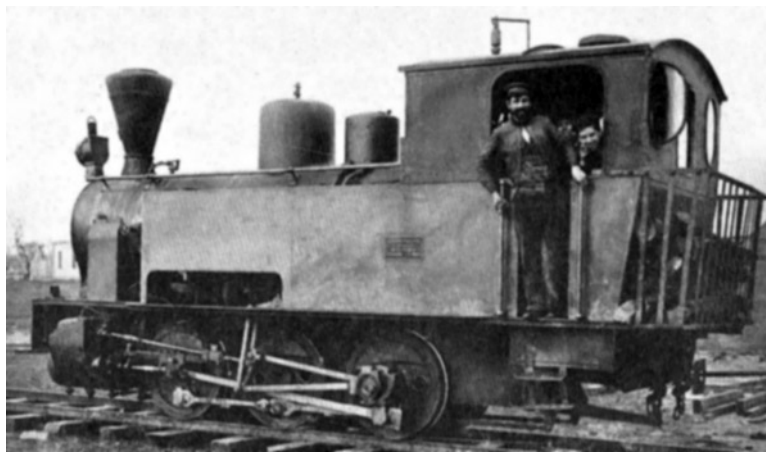


Photo from *Sucesos* magazine 248, almost certainly showing one of these two locos in a cutting near the Rio Quinchilca bridge during construction around 1907.



Photo from cover of *Última Parada*, by Ismael Basso Z., and Yoselin Jaramillo B., 2018.

Later motive power on this railway

After the takeover by the *EFE* in 1943 the whole route was relaid and then heavier locos were brought in, though the original engines continued to work there. A 1952 loco type haulage capacity chart suggests that a *tipo R 2-8-0* had arrived by then but later other classes were on the line.

3.1.10 Later locos of the government's *Dirección de Obras Públicas*

Background

The early *DOP* locos, in the 1890s, have been listed above. By the first years of the new century, the majority of them had been handed over to either the *EFE* – in the case of the Calera to Cabildo, Talca to Constitución, and other lines contiguous with the main broad gauge network – or to the permanent managements of the *ferrocarriles aislados* – as the isolated state railways from Los Vilos, La Serena, and Huasco were known. This section covers the later *DOP* locos from around 1903 onward.

Given that the *DOP* managed the construction of new state railways lines, hired out locos and stock to contractors, negotiated the purchase of new *EFE* locos and stock, and ran newly-opened lines for a while before handing them over to the *EFE*, it is not surprising that there was a close relationship between the *DOP*'s loco fleet and that of the *EFE* itself. Sometimes it seems as though the *DOP* borrowed on a whim whatever engines it needed, and retained them for months or years. The *DOP*'s annual reports (*memorias anuales*) to Congress occasionally listed their locos, but rarely in full detail. The list below is therefore lacking in many details and the engines are often unidentifiable. Dates and specific locations in this section refer to use, usually by contractors, for construction trains.

Running numbers in this section are a mixture of *EFE* numbers as borne when the loco was taken over by the *DOP*, numbers in a separate *DOP* series, and occasionally even builder's numbers when only the builder's works-plate was carried.

0-6-0T d/w 800mm 31½", cyls. 270x260mm 10½"x10¼", built by St. Leonard in 1891

These were purchased for use on construction trains and then for secondary uses. One 1892 source says piston stroke was 350mm. Identifiable by front edge of cabsides dropping down into a curve forward into the top line of the tanks. Four of the six built had joined the main *Red Norte* fleet by 1919.

? **'ALMIRANTE MOLINAS'** 0-6-0T Mixed traffic 144HP, 17/15.5T. Probably numbered **2** or **6** if this was indeed a St. Leonard loco.

1902 Talca a San Clemente,
1910 & 1912 Paloma a San Marcos,
1914 To *EFE* (ep).

'ELQUI' 2-6-0T, 310HP, 28/24T

1910 & 1912 Paloma a San Marcos.
1914 To *EFE* "*entregada provisorio*".

'CAVILOLÉN' 2-8-0 460HP, 36/33T, Rogers 5193 of 1897 for Chilean Longitudinal Railway, no **22**. Then to *EFE* as *tipo R* no. **3084**.

1902 Choapa a Illapel
1910 Choapa a Salamanca,
Recorded inaccurately as a 2-6-0 in 1912.
1914 & 1914 To *EFE* *entregado provisorio*.
1930 memoria listed a 2-8-0 at Choapa – Salamanca as on loan to *EFE* from 1911.

2-6-0 d/w 1100mm, cyls. 360x550mm, built by Borsig in 1905-6

395HP 28.2/24T

340 'RODULFO A. PHILIPPI' 2-6-0, 460/480HP, 36/33T, Borsig 5566 of 1905

1907 On Tongoy railway gauge conversion, though mistakenly referred to as no. **430** [MOBR1910].
1910 Choapa a Salamanca, part of *Lonj. Secc. Sur*, working for Tomás L. Slaughter [MOBR2703].
1911-1912 Monte Oscura a Salamanca, arrived this year.
1914 Choapa a Salamanca.

1919 Had been in use on construction of *FCIP* and was requiring repairs presumably before being returned to the *DOP* [MOBR2972].

1930 Iquique a Pintados. This was probably the same loco, though the weight given is higher at 44.3T.

384 'MANUEL J. HENRIQUEZ' w/n 5794.

1910 & 1911 Paloma a San Marcos,

1912 Paloma a Juntas, delivered that year.

1914 Paloma a Juntas,

1930 memoria says this loco on loan from *EFE*.

1930 memoria lists another unidentified 2-6-0 at Paloma-Juntas as on loan from *EFE* from 1915.

550 'INCA' w/n 5857 This was probably originally *EFE* **386** in the combined 1902 list, but renumbered after its take-over by the *DOP*. Why? **550** fits no known number series, apart from the 1902 *EFE* series where that number was used by a Hanomag 2-6-0.

1910 Curico a Hualañé, working for Germain y Sierra [MOBR2703].

1911 & 1912 Huasco a Vallenar

1918 '*De la DOP*'

1919 *RN* list says this became no. **38** (later **3038**?) and says '*De la DOP*'.

1930 memoria lists this as on loan from *EFE* again.

422 w/n 5952

1910 *Longitudinal Seccion Sur*

1911 Rayado a Papudo, or *Longitudinal Sección Sur*, working for *Sindicato Howard* [MOBR2703].

1912 San Felipe a Putaendo, arrived that year,

1914 (March) still at San Felipe a Putaendo, but contract ending.

1930 memoria says this loco on loan to *EFE* at Rancagua-Doñihue from 1916.

2-6-0 d/w 1000mm, cyls. 430x500mm, built by Borsig in 1907-8

452 w/n 6663

Was to be transferred from *EFE* service at Talca on hire to Señores Germain y Sierra during their Curicó to Hualañé contract in 1910.

2-6-0 d/w 48?" (Though the Lima list gives an unlikely 26"), cyls 15"x22", built by Lima in 1905

Ordered for 'Chile State Ry'. 536/310HP, 39.3/24.2/36T, Later *EFE* No. **3040**. *tipo I*. Ordered for use during construction between Cabildo and Limahuida [MOBR2222].

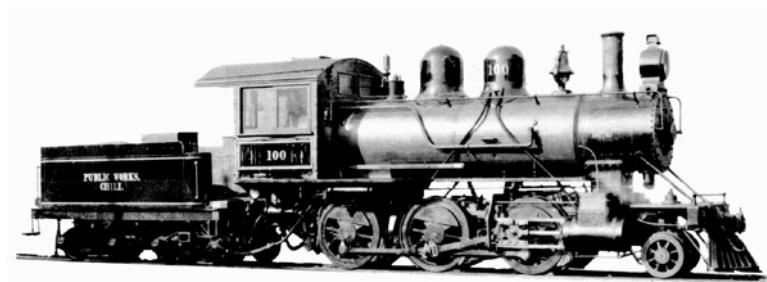
100 w/n 1021

1910, 1911 [MOBR2320], 1912 Choapa a Salamanca,

1914 To *EFE* '*entregado provisorio*'

1918 '*De la DOP*'

1919 *RN* list shows two of these locos, **15** and **100**, both '*de la DOP*'.



Lima builder's pic.

2-6-0 d/w 48", cyls. 15"x22", built by Lima in 1908

Ordered through Spencer & Waters for the *Cía. Agrícola é Industrial Nueva Italia*. 460HP, 36/33T. Identical to Lima 1021 above. This loco had been purchased by the company for their proposed railway from Los Sauces to Capitán Pastene, but was transferred with other assets to the *DOP* on the takeover of the project by the government in late 1908, and the consequent change of gauge to 60cm. Brief correspondence is in ArNAd file [MOBR2116] and [41]. This discovery also solves the puzzle of why a metre gauge loco would have been named 'NAHUEL BUTA' when the Nahuelbuta hills lie across the *FC Lebu a Los Sauces* many miles from any metre gauge railway actually constructed. Was this engine the number **15** mentioned above?

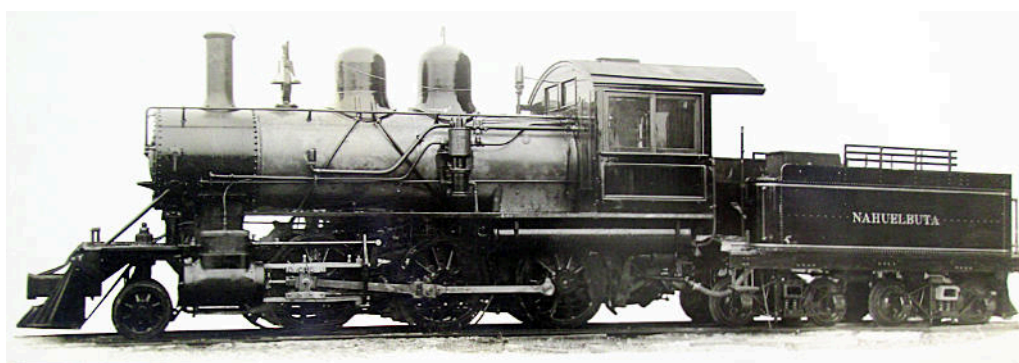
'NAHUEL BUTA' w/n 1074.

Then in 1909 the loco surfaces again, with correspondence in [MOBR2109] suggesting that it should be shipped to La Calera for erection after which it would be used during construction towards Cabildo.

1910 Rayado a Papudo,

1912 & 1914 To *EFE* "entregada provisorio".

Later became *EFE* **3041**? Tipo I.



Lima builder's pic.



'NAHUEL BUTA' at Papudo in 1910, possibly for the opening of a section of line to judge from the display of flags.

2-6-0 d/w 42", cyls. 15x18", built by Baldwin in 1907?

510HP, 31.75/27.2T. ex *Sindicato de Obras Públicas*. The *Sindicato*... was a consortium of contractors formed to bid for public construction contracts and in particular the construction of the *FCALP*. It was awarded the contract in March 1906, but deprived of it in August 1907 owing to lack of progress. See the *Sindicato de Obras Públicas* paragraphs in section 3.3.6. One of these engines was numbered **4** during its early days on the *FCALP* construction when working for Sir John Jackson (Chile) Ltd.

10 w/n 30474

11 w/n 30473

12 'RICARDO COX MÉNDEZ' w/n 30452

1912 Curicó a Hualane.

1918 'De la *DOP*'

One of these was recorded as follows:

1910 & 1912 Los Vilos a Illapel

1914 To EFE “*entregada provisorio*”.

And another was:

1910 Rayado a Papudo

Also note:

14 w/n 27319?

Possibly same loco as no. **48** in 1919, later no. **3048** see below.

1918 ‘*De la DOP*’.

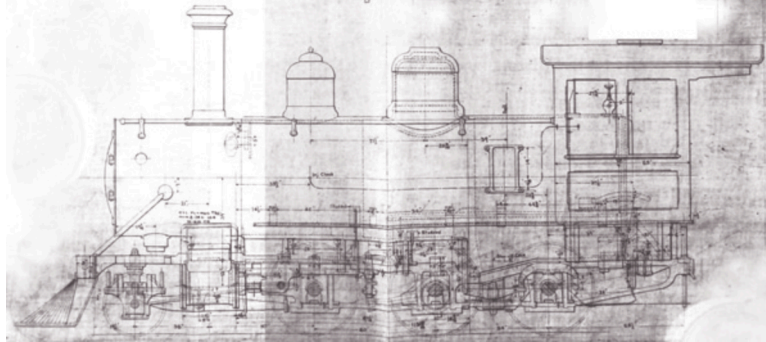
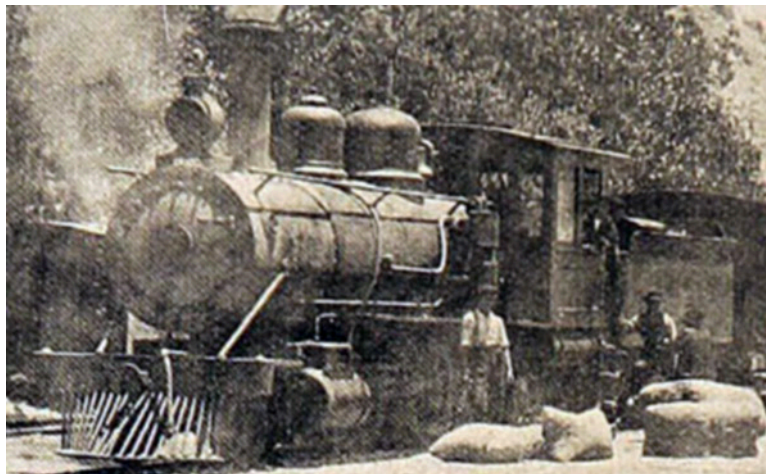


Image taken from a BLW blueprint in the Dewhurst collection at the NRM in York.



This loco was almost certainly one of these Baldwin 2-6-0s, seen hauling the first passenger train between Copiapó and Vallenar in early 1912 [Sucesos issue 535].

2-8-0 d/w 914mm 36", cyls. 370mmx450mm 14¼"x17¾", built by Schneider in 1893-4

13 ‘WALDO SILVA’ 310HP, 28/24.25T, 1902 ‘*Carga, con tender*’ built by Schneider [confirmed in MOBR1398].

1901 had been in use at Ovalle since 1894 on the Ovejerías Negras line works. From Los Vilos moved direct to Lever Murphy for overhaul. Then to Talca where several other Schneider locos were located.

1902 Talca a San Clemente,

1910 & 1912 Paloma a San Marcos

1914 To EFE ‘*entregado provisionario*’

4-6-0 d/w 1219mm 48", cyls. 406mmx559mm 16"x22", built by Lever Murphy 1899/1900, ‘Pasajero, con tender’.

4-6-0 d/w 1016mm 40", cyls. 406x457mm 16"x18", built by Lever Murphy in 1899/1900, ‘Carga, con tender’.

There were five of each of these types, built by LM but as part of a joint bid by LM, BL and Hardie & Co. for rolling stock as well as locos. Delivery was intended to be two of each type to Los Vilos and three of each type to La Calera, but in the event two went to Los Vilos, three to La Serena and five to La Calera. There was a big fuss about defects in quality when these locos were delivered [MOBR1224].

23 'FEDERICO ERRÁZURIZ Z.' *Pasajero, con tender, 44T*

Arrived new from Lever Murphy to the *DOP*, December 1899.

1902 Serena a Rivadavia probably since new.

1909 was shipped from Coquimbo to Arica for use on construction work for the *FCALP*.

A semi-scrapped loco at Arica in 1955 bore the number and name **23 "FEDERICO ERRÁZURIZ"**. This was recorded as a tank loco, but that might have been a mistake or the engine might indeed have been rebuilt to that configuration.

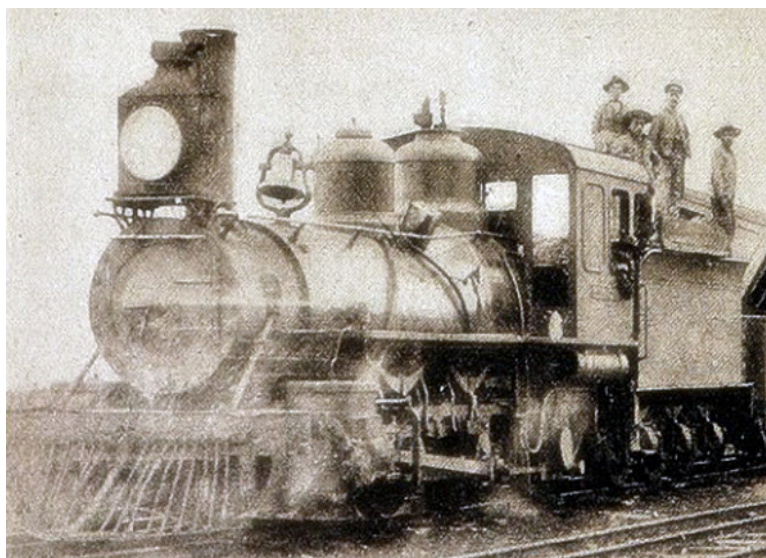
? 'ARTURO ALESSANDRI' Freight tender loco, 44T

Probably also new from Lever Murphy.

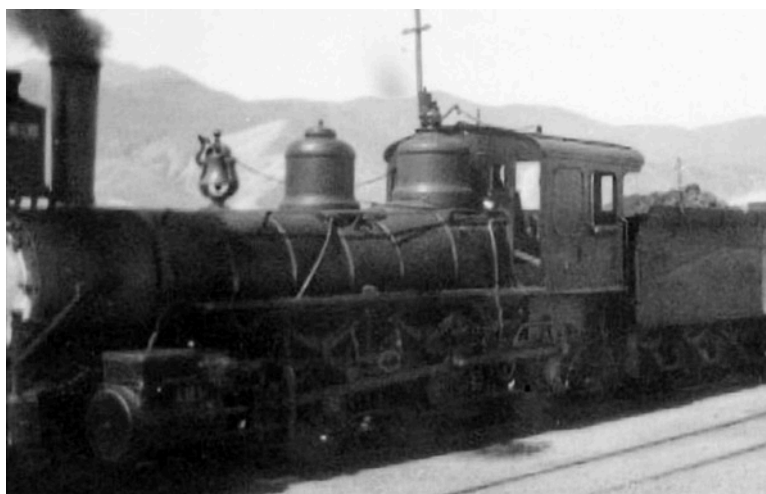
1902 Pueblo Hundido a Inca,

1906 Animas a Los Pozos.

32 'FERNANDO LAZCANA' *Pasajero, con tender*, delivered to Los Vilos in 1899. but no use there owing to fierce curves; proposal in 1901 was to send to Serena a Rivadavia where there were similar locos.



It is not clear whether these photos show the passenger or goods locos. The two variants looked very similar, though the passenger engines were about 12" longer as well as having larger driving wheels. The second image was kindly provided by Señor Jair Larenas.



The apparent length of the loco in this view suggests that it was one of the 'passenger' variant.

0-8-0T d/w 42", cyls. 16"x20", built by Baldwin in 1907

Ordered for the Sindicato de Obras Públicas contract building the FCALP. The *SOP* was awarded the contract in

March 1906, but deprived of it in August 1907 owing to lack of progress.

20

w/n 30407

The following two sets of locos need further study. There are conflicts and inconsistencies between the two sets of notes.

2-6-0 d/w ?, cyls. ?, built by O&K in 1910

550HP 43.2/42.2/36T delivered to *DOP* bearing nos. **21-26**. Merte's lists says 350hp. Acquired by decree 2144 of 25th November 1909. A pair of O&K metre gauge 2-6-0s arrived at Valparaiso on board the SS *Riol* in June 1910, and another pair definitely from this batch similarly arrived in early August 1910 on board the SS *Osiris*. A fifth arrived on board the SS *Rhakotis* later that month and the last aboard the SS *Setos* in early October [All in MOBR2703]. Three of these were found to be surplus to requirements and were sold to the Howard Syndicate for use on the construction of the *Lonj. Seccion Sur* [MOBR2307], and presumably then sold back to the state on the completion of the work. Also [MOBR2335] notes that they were too long for the turntables at that time in place. They seem to have been renumbered into the 60s by 1915, possibly because by that time they were in use on railways such as the *FCIP* where numbers in the 20s clashed with others.

21

w/n 3971

1910 Rayado a Papudo i Trapiche,
1911 working for *Sindicato Howard*.
1912 & 1914 to *EFE* (ep),
1930 at Iquique a Pintados.

22

w/n 3972

1910, 1911, 1912 & 1914 San Felipe a Putaendo. A photo suggests that it was one of these O&Ks that hauled the opening day train on that line. However the contract was ending there in early 1914.
1915 renumbered **61** and working on construction of *FCIP* [MOBR2972].
1930 On *FC Iquique a Pintados* numbered **1022** which implies either that someone had recorded the loco's original number **22**, or that the original number-plates had remained in place despite the official interim renumbering to **61**.

23

w/n 3973

1910 *Lonjitudinal Seccion Sur*: Almost certainly one of those sold to the Howard Syndicate.

24

w/n 3974

1910 *Lonjitudinal Seccion Sur*: Almost certainly one of those sold to the Howard Syndicate.

25

w/n 3975

1910 *Lonjitudinal Seccion Sur*: Almost certainly one of those sold to the Howard Syndicate.

26

w/n 3976

1910 & 1912 & 1914 Rancagua a Doñihue. A photo of the opening of this line on February 21st 1915 includes a view of the upper parts of one of these engines, presumably this one.
1919? renumbered **60** and working on the construction of the *FCIP* [MOBR2972]. A Koppel loco no. **2** was referred to around that time so it may be that these two locos (**22** and **26**, otherwise **61** and **60**) were locally numbered **1** and **2** for the duration [MOBR2972].
1930 On *FC Iquique a Pintados* numbered **1026** which implies either that someone had recorded the loco's original number **26**, or that the original number-plates had remained in place despite the official interim renumbering to **60**.

2-6-0 d/w 1105mm 43½", cyls. 450x600mm, built by O&K in 1912

Ordered for Chilian Northern Rly. See above. Two of these at least were on the *FCIP* by 1919 with new numbers **60** and **61**, though whether these were *FCIP* or *DOP* numbers is unclear. They were later recorded (1930) as working for the *DOP* at the same location.

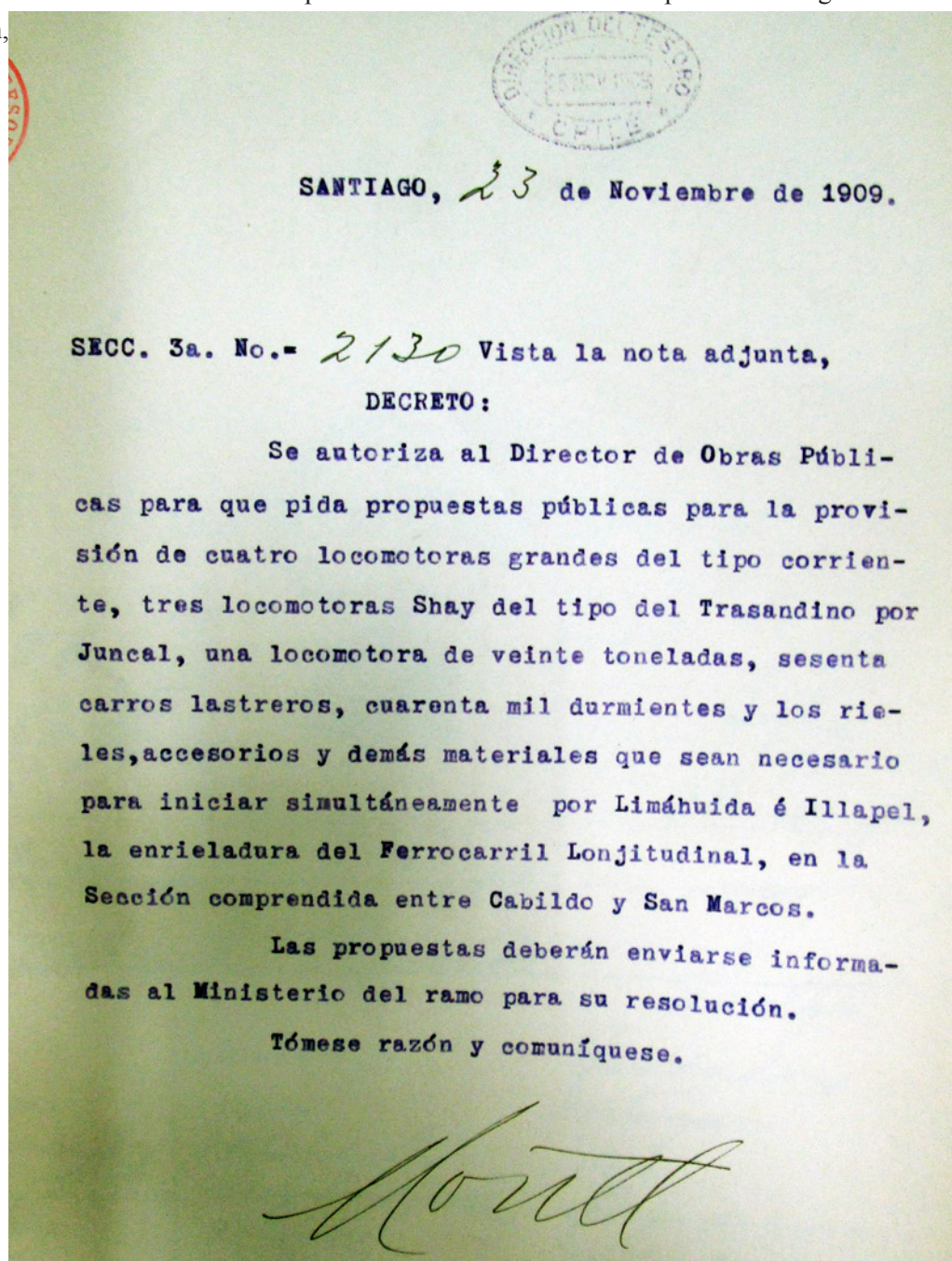
60	ex FCNC 26 later 1026 w/n 5206	1930 FC Iquique a Pintados.
61	ex FCNC 22 later 1022 w/n 5202	1930 FC Iquique a Pintados.
69	?	1930 FC Iquique a Pintados.

0-4-4-0 Three truck Shays d/w 36", cyls 12"x15", gear ratio 2.25, built by Lima in 1910

1300HP, 70T. Class C 70-3 coal burning, empty weight 117,936lb. Running numbers 27-9 acc. to Lima list. 1920 One of these to EFE (*entregado provisorio*). Bought initially by the DOP for construction use between Cabildo and Limahuida. Contract signed February 1910 [MOBR2222], early enquiries having specifically been for locos similar to that on the FCTC.

27	w/n 2289
	1910 Longitudinal Seccion Sur.
28	w/n 2290
	1910 Longitudinal Seccion Sur.
29	w/n 2291
	1910 Longitudinal Seccion Sur.

When the construction work had been completed two of these locos were reported as being on the Cabildo to San Marcos section,



2-6-0 d/w 1066mm 42", cyls. 381x457mm 15"x18", built by Baldwin

48T. BLW class 8-24D nos. 131, 134 & 141.

3046	ex 492	w/n 25022 of 1905	In use by <i>DOP</i> on Iquique a Pintados in 1930. May originally have been <i>EFE</i> 291 . ???
3048	ex 493	w/n 27319 of 1906	in use by <i>DOP</i> on Iquique a Pintados in 1930.
?		w/n ?	

An American style 2-6-0, probably by Baldwin and possibly one of these, hauled the opening train on the Chañaral to Copiapó link in late 1909. It bore a smokebox door number plate seemingly carrying a two figure number, and a capped chimney which seems to rule out it's having been one of the ex *SOP* Baldwin 8-24D locos as they had stovepipe chimneys.

[21] also suggests that the Jung 2-8-0s 1975-79 and Hanomag 2-8-0 6944 (all of 1913-14) were *DOP* locos at some point. They were delivered via Gutmann & Maurer and Walter Bade but the customer is not specified in the Jung list. Their running numbers were supposedly **70-74** and **75** but in whose list? The numbers do follow on from the O&K 2-6-0 no. **69** mentioned above.

Notes from 1915

The following notes from the *boletín mensual* of the *EFE* in 1915 refer to metre gauge locos:

"El señor Director Jeneral hace presente que, al entregar la Direccion de Obras Públicas a la Empresa de los Ferrocarriles el Ferrocarril de San Felipe a Putaendo, entregó tambien, en calidad de préstamo, un tren lastrero con dos locomotoras, equipo que debería ser devuelto en caso que la Direccion necesitara de él.

La Direccion de Obras Públicas reclama hoy la devolucion de una locomotora, que necesita con urgencia para el Ferrocarril de Rancagua a Doñihue. Esa locomotora ha sido reparada por la Empresa, pero como a su vez ésta la ha mantenido en servicio sin gravámen alguno cerca de un año, cree el señor Director que podría devolverse sin cargo para la Direccion de Obras Públicas por las reparaciones."

3.2 *EFE* lists

3.2.1 The 1902 *EFE* mixed gauge sequence of new numbers

Background

In 1902, it was decided to have all new *EFE* 1676 and 1000mm locomotives in one list. Copeland says that **296-315** were left blank to accept the existing narrow gauge stock (and possibly **291-295** as well), but this would clearly only cater for a very few existing locos and there is little sign that any other than the Rogers 2-8-0s were renumbered into that sequence.

At this point the *EFE* was responsible for the following metre gauge routes:

Talca to Constitución

La Calera to Cabildo

Los Vilos to Illapel and Salamanca

La Serena to Rivadavia (the rebuilt and extended *FC de Elqui*)

Huasco to Vallenar

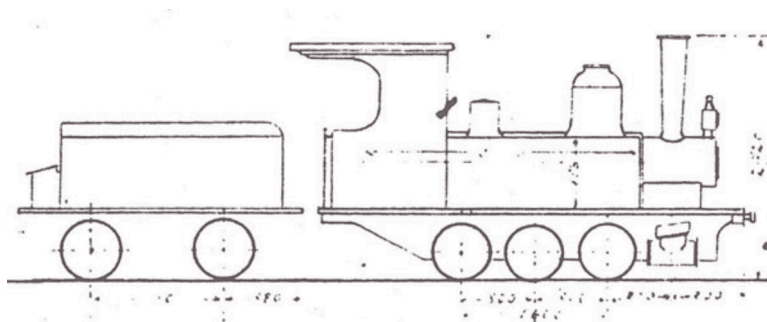
Existing metre gauge locos:

293-295 Unknown, may have been broad gauge.

0-6-0 No details known

In 1912 a supposedly US-built 0-6-0 with this number (but see the diagram below) was working on the Los Vilos railway. Source [11] suggests it had apparently been withdrawn by 1919, but this is unlikely if it was a new loco. More likely it had been borrowed by the *DOP* and was therefore no longer in the *EFE* fleet. Incidentally, the contractors Germain y Sierra had four VIW metre gauge 0-6-0Ts. Their broad gauge locos were eventually sold to the *EFE*, so the metre gauge equivalents might also have ended up in government ownership. The broad gauge engines came into *EFE* ownership around 1918-19, but presumably these things depended on which contracts had been won so GyS may well have sold off metre gauge locos rather earlier.

296 w/n ?



This diagram sheet sketch rather confuses matters, suggesting as it does that loco no. **296** was not American-built but instead came from France or Belgium.

Whilst the cabs are different, this sketch has definite similarities to the photo a few pages earlier at the end of the *FC Trasandino por Antuco* pages in section 3.1.8.

2-4-2T ex 2-4-0 d/w 48", cyls. 14x18", built by Rogers in 1897

Ordered via W. R. Grace & Co., as no. **18** 'PALOS QUEMADOS'. In the 1919 lists there was a Rogers 2-4-2T of 12 tonnes, *grupo* 6, supposedly originally numbered **298**, and then no. **18**, though that was probably the wrong way round. The no. **298** seems unlikely given the Rogers 2-8-0s below, but it might have been **297**. NB this had originally been a 2-4-0, which makes sense given that Rogers list shows no 2-4-2 or 2-4-2T for Chile.

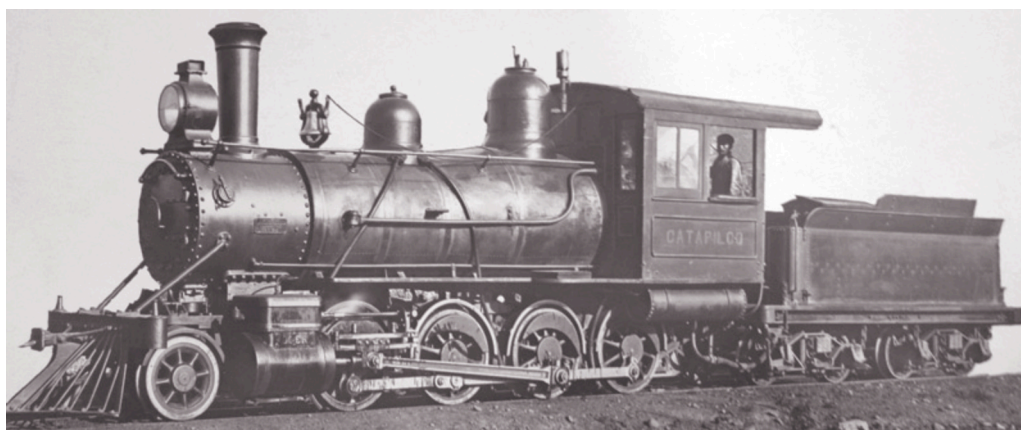
2-8-0 d/w 991mm 39", cyls. 406x457mm 16"x18", first batch built by Rogers in 1897

298 'CATAPILCO' w/n 5190 ex no. **19**

299 'LA LIGUA' w/n 5191 ex no. **20**

300 'LOS VILOS' w/n 5192 ex no. **21**

Probably minus 'CAVILOLÉN' ex no. **22** (4th in the batch) which may already have been with the *DOP*. **298-300** were working Calera to Cabildo in 1909 [11]. The post-1908 *EFE* diagram book lists seven of these, nos. **298-300**, and **303-307**, calling them '*tipo consolidada Calera*'.



'CATAPILCO' from the first batch of Rogers 2-8-0s, though without an obvious number and with a non-standard cab.

301 ?

Possibly allocated to either of the missing Rogers 2-8-0s.

302 ?

Possibly allocated to either of the missing Rogers 2-8-0s.

2-8-0 d/w 991mm 39", cyls. 406x457mm 16"x18", second batch built by Rogers in 1900

Note that again one loco must be missing from the six built. w/n 5647-5652. ex **33-38**. **303-7** were working Calera to Cabildo in 1909 [11].

303

304

305

306

307

These will have previously been from the following, but precise identities are unknown. It seems possible that no. **38** was the missing one, in use by the *DOP*.

33 'INCA' w/n 5647

34 'PUEBLO HUNDIDO' w/n 5648

35 'CHAÑARAL' w/n 5649

36 'ATACAMA' w/n 5650

37 'OVALLE' w/n 5651

38 'LA PALOMA' w/n 5652

The post-1908 *EFE* diagram book lists eight of these, nos. **298-300**, and **303-307**, calling them '*tipo consolidada Calera*'.

308-315 Unknown, may not have been allocated.

New metre gauge locos:

Number series **338-341**, **383-387**, **422-431**, **452-456**, **492-493**, and **549-553** were given to new batches of metre gauge locos, until around 1909-10 the policy was changed and the metre gauge numbers were again separated from the broad gauge. The engines allocated these numbers are listed below:

2-6-0 d/w 1100mm, cyls. 360x550mm, built by Borsig in 1905

Listed in *EFE* post-1908 diagram book as '*Borsig tipo mogul - Talca*'. Nos. **340** and **341** were part of the 30 loco contract. The Borsig numbers for the first two are uncertain. The locos cannot be found in Merte's Borsig list but nos. 5557-8 are shown as unknown, information missing. Running board steps at both ends, and no cab side windows.

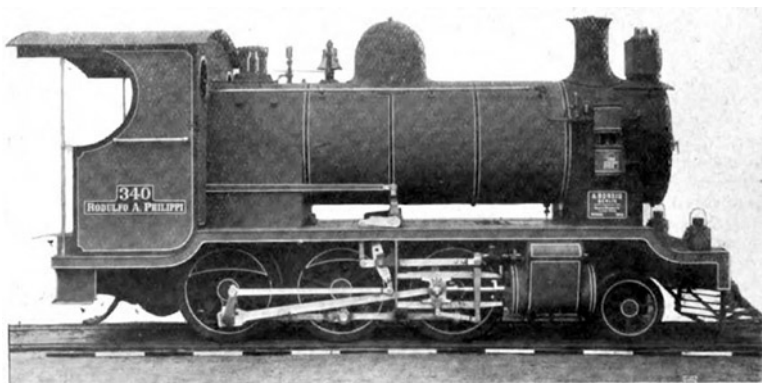
338 w/n 5557?

339 w/n 5558?

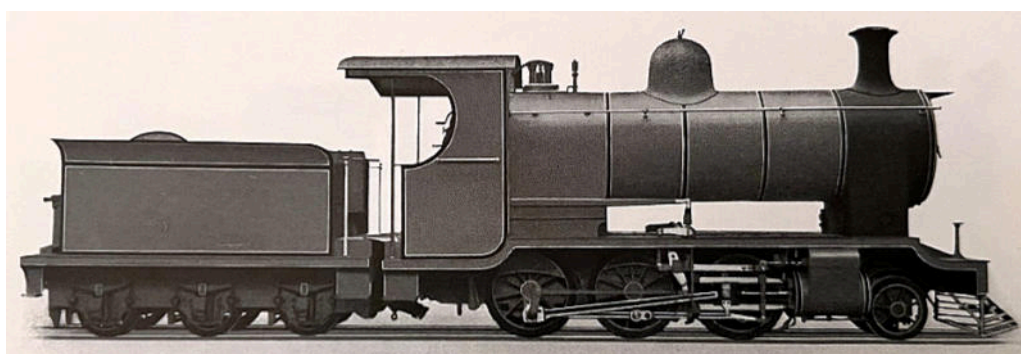
340 'RODULFO A. PHILIPPI' w/n 5566 in use by *DOP* 1910-4 on Choapa to Salamanca line construction, and by *DOP* on Iquique to Pintados line in 1930 [1]. Was in *FC Iquique a Pintados* fleet in 1931 [11].

341 w/n 5567

Four listed in post-1908 *EFE* diagram book [24] on page 50 (?). **338-9** not yet found in Borsig list. But note that **340-1** are listed by mistake in Jens Merte's Borsig list as broad gauge.



Borsig publicity photo.



A Borsig catalogue illustration kindly provided by Simon Colbeck. This would seem to show a locomotive built to roughly the same design as those for Chile but supplied tolt will be noted that the boiler is mounted slightly higher than on the Chilean engines.

2-6-0 d/w 1100mm, cyls. 360x550mm, built by Borsig in 1905

Batch weight: 28T adhesive, 38T total (?) [2]. *Tipo* 'Talca', part of the 44 loco contract negotiated by Sr. Justiniano Sotomayor via M. Gleisner & Co. See [MOBR1802].

383 w/n 5793

383-384 ordered by decree 458 of 7-4-1905. Into service August 06 [2]. According to Borsig list it was ordered for the Talca-Constitución line.

384 ‘MANUEL J. HENRÍQUEZ’ w/n 5794

Into service August 06 [2]. In use by *DOP* on Paloma to Juntas line construction according to 1911/1914 *DOP* memorias, also later on Paloma to Juntas line works in 1930 [1]. According to Borsig list was ordered for Talca-Constitucion line.

385 w/n 5838

385 and **386** ordered by decree 1282 of 14-7-1904 along with broad gauge locos. Into service July 05 [2]. For Chañaral section. According to the Borsig list it was ordered for the Talca-Constitucion line.

386? w/n 5857

Into service July 05 [2]. For Chañaral section, but almost immediately borrowed by the *DOP*, where it became known as **550 ‘INCA’** for some reason, and at other time was merely identified by its w/n. That of course freed up the number **386** for the loco below. In use by *DOP* in 1911 on Huasco to Vallenar construction [1] [11]. One Borsig list says this was no. **550**, whilst another lists it without any running number.

2-6-2T d/w 1100mm, cyls. 360x550mm, built by Borsig in 1906

‘*Chilenische Staatseisenbahn für Coquimbobahn*’ [MOBR1802], and same file refers to them as *de trocha ancha* (sic) for Rivadavia. They were ordered by decree 2640 of 30-9-1905, as part of the 44 loco contract negotiated by Sr. Justiniano Sotomayor via M. Gleisner & Co. The file notes locos **386-9** were to be embarked on a ship on 23rd June, locos **390-2** similarly on 30 June, and locos **393-4** on 7 July 1906. It is interesting that these locos were ordered as **15 ‘MARQUESA’** and **16 ‘ALTOVALSOL’** of the Coquimbo fleet even though the 1902 *EFE* number series would have been in use by then. They seem to have been running in 1905-7 with those local numbers.

386 w/n 5896

Borsig list has “*Chilenische Staatseisenbahn für Coquimbobahn* ‘**MARQUESA 15**’”.

387 w/n 5897

Borsig list has “*Chilenische Staatseisenbahn für Coquimbobahn* ‘**MARQUESA 16**’” but in the 1906 Maestranza Coquimbo list [MOBR3079] it is shown as **16 ‘ALTOVALSOL’**. Altovalsol, like Marquesa, is a *pueblo* in the Elqui valley.



Borsig publicity photo. The steel valances behind the rear steps were later removed, presumably to improve access to the rear trucks.

2-6-0 d/w 1100mm, cyls. 360x550mm, built by Borsig in 1906

Batch weighed 24T adhesive, 28T total [2]. Ordered by decree 1599 of 15-12-1905. Expected to be completed by

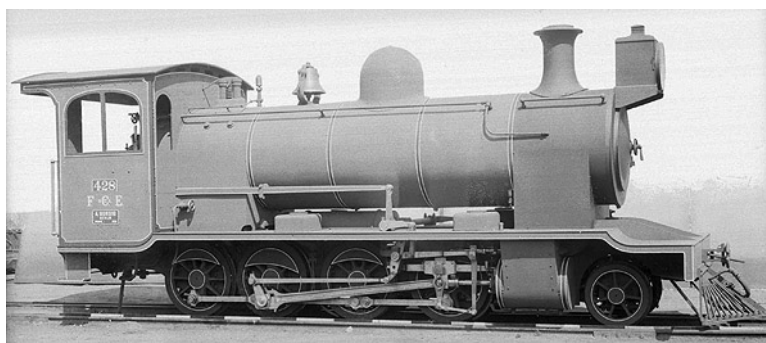
Borsig in October 1906 [MOBR1802]. Known as '*tipo Talca*' in correspondence around time of purchase.

422	w/n 5952	Into service Dec 06 to Feb 07 on Talca-Constitución route [2]. In use by <i>DOP</i> on <i>Longitudinal Seccion Sur</i> in 1911 and on San Felipe to Putaendo line construction in 1914 [1].
423	w/n 5953	Into service Dec 06 to Feb 07 on Talca-Constitucion line [2].
424	w/n 5954	Into service Dec 06 to Feb 07 on Talca-Constitucion line [2].
425	w/n 5955	Into service Dec 06 to Feb 07 on Talca-Constitucion line [2].

2-8-0 d/w 1000mm, cyls. 430x500mm, built by Borsig in 1906

Batch has weights: 30T adhesive, 32T total [2]. Ordered by decree 1599 of 15-12-1905, supposedly for Calera and Chañaral. Part of the 44 loco contract negotiated by Sr. Justiniano Sotomayor via M. Gleisner & Co. See MOBR1802 Borsig lists says built for Calera to Cabildo. Expected to be completed by Borsig in July 1906 [MOBR1802].

426	w/n 5956	Into service Dec 06 to Feb 07 on 'Calera – Chañaral' line [2].
427	w/n 5957	Into service Dec 06 to Feb 07 on 'Calera – Chañaral' line [2].
428	w/n 5958	Into service Dec 06 to Feb 07 on 'Calera – Chañaral' line [2].
429	w/n 5959	Into service Dec 06 to Feb 07 on 'Calera – Chañaral' line [2].
430	w/n 5960	Into service Dec 06 to Feb 07 on 'Calera – Chañaral' line [2]. Early photos including one showing this loco numbered as 430 suggests that no names were given to these engines.
431	w/n 5961	Into service Dec 06 to Feb 07 on 'Calera – Chañara'l line [2].



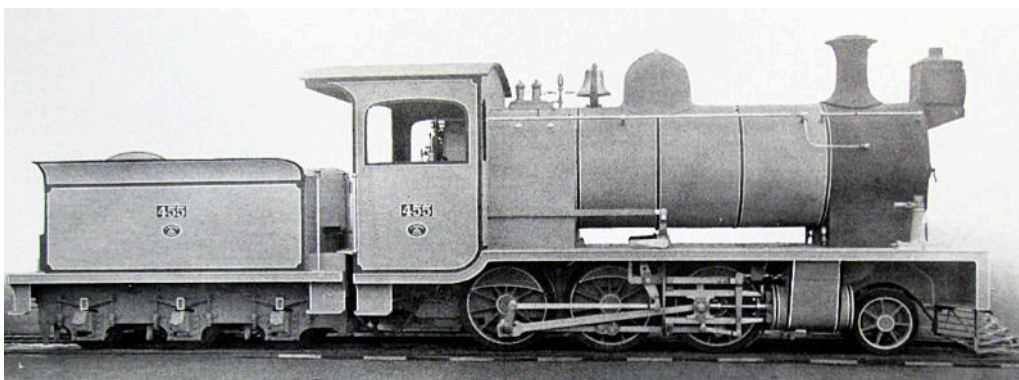
Borsig publicity photo, via Jens Schindler.

2-6-0 d/w 1000mm, cyls. 430x500mm, built by Borsig in 1907-8

Full payment made by decree of 20th April 1908, and also for another batch of "5 locomotoras de carga de 30 toneladas" Batch had adhesive weight 26.8T, total weight 30.8T(?) [2]. Ordered by decree of 6-5-1907. Whole batch built for Talca - Constitucion line? [11].

452	w/n 6663	Into service April-May 08 [2]. In August 1910 was to be moved from Talca to Curicó to be hired to <i>Señores Germain y Sierra</i> during their construction contract on the Hualañé line [MOBR2319].
453	w/n 6664	Into service April-May 08 [2].
454	w/n 6665	Into service April-May 08 [2]. On Los Vilos line in 1912 [11].
455	w/n 6666	Into service April-May 08 [2].
456	w/n 6667	Into service April-May 08 [2].

These five locos eventually became the *Red Sur's tipo T*.



Borsig publicity photo.

2-6-0 d/w 1066mm 42", cyls. 381x457mm 15"x18", built by Baldwin in 1905 (492) and 1906 (493)

First one was BLW class 08-24D no.131. Spec. is in vol. 27 p125. Erecting card drawing 468-28 is in the DeGolyer Library collection.

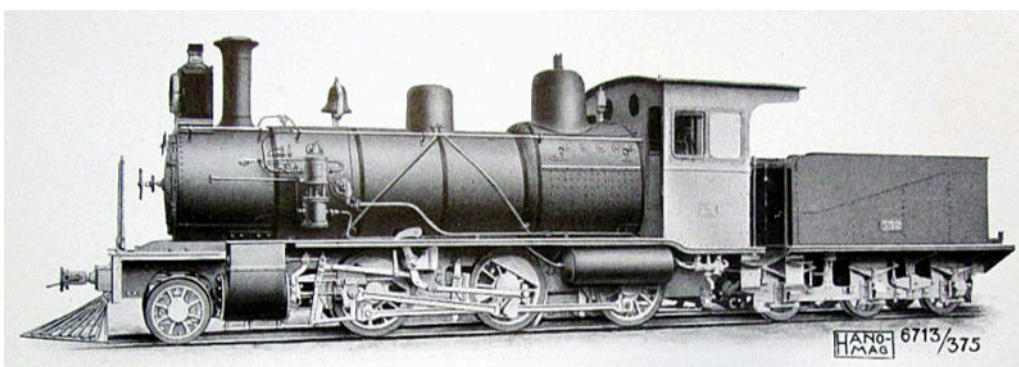
492	w/n 25022	Used by <i>DOP</i> at Iquique to Pintados 1930, numbered 3046 . May have been originally numbered 291 .
493	w/n 27319	Used by <i>DOP</i> at Iquique to Pintados 1930 and 1931, numbered 3048 .

2-6-0 d/w 1105mm 43½", cyls. 410x560mm, built by Hanomag in 1909

Diagram displayed in post-1908 diagram book as metre gauge for *FC de Coquimbo* Full payment for "5 locomotoras estanques" made by decree of 20th April 1908, but it may in fact have been for this batch of tender locos [].

549	w/n 5392
550	w/n 5393
551	w/n 5394
552	w/n 5395
553	w/n 5396

These must have been renumbered by 1912 when Hanomag supplied broad gauge 4-6-0s with identical numbers.



Hanomag publicity photo.

3.2.2 A summary of the 1919 *Red Norte* list

Although *EFE* metre gauge locos are listed in full under their 3000 and 4000 series post-1921 numbers in sections 3.2.4 and 3.2.5 which follow this, it may be helpful to have a summary of the *Red Norte* 1919 numbers. This data is from the list published in the *EFE memoria anual* in 1919.

<i>Grupo</i>	Year	1919 numbers	Builder	Wheels	Post-1921 <i>tipos</i>
1	1910	1-6	Esslingen	0-8-2zT	U
2	1919	7-9	Baldwin	2-8-2zT	V
3	1890	10-13	St.Leonard	0-6-0T	A
4	?	14-15	Corpet Bourd.	0-6-0T	B
5	1878	16	Neilson?	2-4-0T	C
6	1897	17	Rogers	2-4-2T	D
7	1895	18-20	Schneider	2-8-0	E
8	1910	21-30	Hunslet	0-6-4T	F
9	1913	31	Hanomag	2-8-0	S
10	1909	32-36	Hanomag	2-6-0	G
11	1903	37-40	Borsig	2-6-0	H
		41		Left blank, or possibly vacated by the third Hawthorn 4-6-0	
12	1884	42-43	Hawthorn	4-6-0	J
13	1906	44-45	Borsig	2-6-2T	K
14	1907	46-49	Baldwin	2-6-0	L
		50		Left blank possibly for another LM loco	
15	1899	51-54	Lever Murphy	4-6-0	M
16	1899	55-58	Lever Murphy	4-6-0	N
		59-61		Left blank possibly for other LM locos	
17	1910	62-64	O&K	2-6-0	O
18	1907	65-70	Borsig	2-8-0	P
19	1912	71-80	Henschel	2-6-0	Q
20	1889	81-90	Rogers	2-8-0	R
21	1907	91-92	Lima	2-6-0	I
22	1913	93-97	Jung	2-8-0	S
23	1912	98-102	Henschel	2-6-0	T
23	1912	103-109	O&K	2-6-0	T

It will be noted that the sequence from **1** to **109** is continuous with the exception of five unused numbers, **41**, **50** and **59-61**. As there were four other Lever Murphy 4-6-0s working at that time on the *Red Sur* metre gauge branches, it may be that numbers **50** and **59-61** were left blank specifically in case those engines should have moved north.

3.2.3 The *Red Sur* metre and 60cm gauges list from the 1910s

Whilst the *Red Sur* is thought of as having been largely of broad gauge, in fact it possessed eight separate sections of metre gauge, though not all at the same time. Several more metre gauge passenger-carrying railways adjoined it.

These were, from north to south:

- 1 La Calera to Cabildo, ie. the southernmost section of the *FC Longitudinal*. This was part of the *Red Sur* until 1916 when the *Red Central Norte* was created.
- 2 San Felipe to Putaendo, opened 1914, closed 1965. Part of *Zona I*.
- 3 The *FCTC*. Taken over by the *EFE* in 1934.
- 4 (The *FC Llano de Maipo*, Santiago Pirque to Puente Alto and Barrancas. Private, electrified from 1925.)
- 5 Rancagua to Donihue, opened 1915, regauged and extended to Coltauco 1935, closed 1974? Part of *Zona II*.
- 6 Curicó to Hualañé and Licantén, opened 1912, closed 1978. Part of *Zona II*.
- 7 Talca to Constitución, opened 1892 onward, still in use. Part of *Zona II*.
- 8 Talca to San Clemente and Perquín, opened 1904, closed 1970s? Part of *Zona II*.
- 9 (General Cruz to Pemuco. Privately-owned. Opened 1908, closed 1943?)
- 10 Monte Aguila to Polcura, ie. the ex *FC Trasandino por Antuco*, taken over in 1943. Part of *Zona III*.
- 11 (San Vicente to Talcahuano naval base. Owned by the *Armada de Chile*)
- 12 Los Lagos to Riñihue, ie. the ex *FC Trasandino por San Martín*, taken over in 1943. Part of *Zona III*.

The *Red Sur* metre gauge and 60cm gauge numbering system

The *Red Sur* seems to have created its own numbering system for its metre gauge locos sometime late in the first decade of the 20th century, and then added the 60cm gauge locos to this early in the following decade. As the suggestion that there was a single *Red Sur* list covering both metre gauge and 60cm gauge has not been met elsewhere, it seems sensible to set out the thought that has gone into this conclusion:

- 1 In 1921 the *Red Norte* metre gauge loco fleet had 3000 added to each number, whilst the *Red Sur* metre gauge locos were then numbered from 4000 upwards and the *Red Sur* 60cm gauge locos were in the 5000 series. Did they too start with smaller numbers before 4000 and 5000 were added to them? Certainly it looks that way for the 60cm gauge locos, as several of them had numbers around 1914 which closely match the tens and digits of their later 5000 series numbers.

- 2 Why would the 60cm gauge locos be numbered **5025** and then **5038** through to **5054**? Did they fit into a bigger scheme involving other locos on a different gauge?

- 3 Putting these two questions together, led to the surmise that the *Red Sur* might have had a combined narrow gauge numbering system before 4000 or 5000 were added to each number in 1921. The following list shows **known *Red Sur* metre gauge numbers -4000** in black, **and known 60cm gauge numbers -5000** in red. **Additional metre gauge numbers known to have been added through the purchase of second-hand locos between 1917 and 1920 have been added in blue.**

_, _, _, _, _, 7, 8, 9, _, _, _, _, _, 18, _, _, _, _, _, **25**, _, 27, 28, 29, 30, 31, 32, 33, 33, 34, 35, 36, 37, 38, **38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61.**

As will be clear, the fit is almost perfect. There are only two duplicates, at **33** and **38**, and one of them may be a mistake. It will also be noted that all of the vacant numbers, ie. **1-6, 10-17, 19-24**, and **26**, are at the lower end of the range, thus possibly belonging to older locos which might well have been withdrawn before being recorded in surviving lists or to metre gauge engines transferred to the new *Red Norte* in 1916.

- 4 A further guess is that after all the 60cm gauge locos had been added at once and in a logical order from *tipo a* to *tipo h*, then any further locomotives were generally added to the list one at a time and in chronological order.

- 5 It seems likely that original metre gauge locos **25** and **38** had been withdrawn or transferred at the time that the 60cm locos were added, but that all other metre gauge locos up to **37** were in the fleet at that point in time.

- 6 As these numbers run through from **7** to at least **61**, and with the latter part of the list being almost complete,

it seems logical to assume that they actually started at **1** and that there will have been locos not-yet-identified in any gaps.

7 In particular it seems likely that many of the lower numbers will have been occupied by locos working on the La Calera to Cabildo line which in 1916 moved to the newly-formed *Red Norte*. Fortunately the 1919 *Red Norte* list shows locos' earlier numbers, which may help to fill the gaps.

The following list has been created using the logic set out above, but is inevitably very speculative and should not be relied upon until independent corroboration is found. There are one or two alternative identities, where two or more possibilities have been identified under the same number. These are not necessarily situations where there is one right answer. For example, when the La Calera to Cabildo route became part of the new *Red Norte* in 1916, a number of locos will have left the *Red Sur* fleet and newly vacant numbers may well have been reused. In order to give some indication of the reliability of these suggested identities, 'definites' are shown in black whilst 'probables' and 'possibles' are shown in darker or lighter grey.

RS no.	Gauge	Builder	Works nos.	Wheels	Previous no. & name	1916 RN no.	1921 tipo & no.
1	Metre	Rogers	5190	2-8-0	ex 19 'CATAPILCO'	81	R 3081
2	Metre	Rogers	5191	2-8-0	ex 20 'LA LIGUA'	82	R 3082
3	Metre	Rogers	5192	2-8-0	ex 21 'LOS VILOS'	83	R 3083
4	Metre	Rogers	5193	2-8-0	ex 22 'CAVILOLÉN'	84	R 3084
5	Metre	Rogers	5647	2-8-0	ex 33 'INCA'	85	R 3085
6	Metre	Rogers	5648	2-8-0	ex 34 'PUEBLO HUNDIDO'	86	R 3086
7	Metre	Rogers	5649	2-8-0	ex 35 'CHAÑARAL'	87	R 3087 ,
7	Metre	Borsig		2-6-0			H 4007 3101
8	Metre	Baldwin	25022	2-6-0	ex 492 Possibly moved elsewhere as renumbered 50 , then 46 , 3046		
8	Metre	Borsig		2-6-0			H 4008 3102
9	Metre	Borsig		2-6-0	ex 452-6 Borsig 6663-7		T 4009 3111
10	Metre	?					
11	Metre	Baldwin	24756?	2-6-0	Possibly moved elsewhere as renumbered 89 , then 47 , 3047		
12	Metre	?					
13	Metre	?					
14	Metre	Baldwin	27319	2-6-0	ex 493 Possibly moved elsewhere as renumbered 94 , then 48 , 3048		
15	Metre	Lima	1074	2-6-0	<i>DOP</i> loco 'NAHUEL BUTA'	41	I 3041
					Was on Rayado to Papudo, and was certainly known as no. 15 .		
16	Metre	?					
17	Metre	?					
18	Metre	Borsig		2-6-0	ex 452-6 Borsig 6663-7		T 4018 3112
19	Metre	?					
20	Metre	?					
21	Metre	?					
22	Metre	Rogers	5650	2-8-0	ex 36 'ATACAMA'	88	R 3088
22?	Metre	Vulcan Iron Works?		2-6-0	ex Germain y Sierra		4022?
23	Metre	Rogers	5651	2-8-0	ex 37 'OVALLE'	89	R 3089
23	Metre	Vulcan Iron Works		2-6-0	ex Germain y Sierra		4023?
					Was on Curicó – Hualañé line in 1917-8 [40].		
24	Metre	Hanomag	6944	2-8-0	ex <i>DOP?</i> 75 , ex 'HUALAÑÉ'	92	S 3092
					Was on Curicó – Hualañé line in 1917-8 [40].		
25	Metre	St. Leonard	?	0-6-0T	To <i>Red Norte</i> 1916?	10	3010
25²	60cm.	Jung	1350/1 or 2034	0-6-2T	1 , 2 or 3		a 5025

26	Metre	?					
27	Metre	Schneider 2556?	4-4-0	ex 8 ‘(PEDRO?) AMADO PISSIS’		B 4027	3004
				Was on Curicó – Hualañé line in 1917-8 [40].			
28	Metre	Schneider 2557?	4-4-0	ex 9 ‘?’		B 4028	3005
29	Metre	Schneider 2558?	4-4-0	ex 10 ‘IGNACIO VALDIVIA’		B 4029	3006
30	Metre	Schneider 2559?	4-4-0	ex 11 ‘ANDRES A. GORBEA’		B 4030	3007
				Decreto 1962 of August 5th 1908 authorised the expenditure of \$10,000 on a new boiler and firebox for a loco no. 30, though it may not have been this engine.			
31	Metre	Schneider 2560?	4-4-0	ex 12 ‘JORJE MONTT’		B 4031	3008
32	Metre	Schneider 2561?	2-8-0	ex 13 ‘WALDO SILVA’?		E 4032	
33	Metre	Schneider 2562?	2-8-0	ex 14 ‘RAMÓN BARROS LUCO’?		E 4033?	
33	Metre	Borsig	? 2-6-0			H 4033	3103
33	Metre	Rogers	5652 2-8-0	ex 38 ‘LA PALOMA’	90	R 3090	
34	Metre	Borsig	? 2-6-0			H 4034	3104
				Was on Curicó – Hualañé line in 1917-8 [40].			
35	Metre	Borsig	? 2-6-0			T 4035	3113
				Was on Curicó – Hualañé line in 1917-8 [40].			
36	Metre	Borsig	? 2-6-0			H 4036	3105
37	Metre	Borsig	? 2-6-0	ex 452-6 Borsig 6663-7		T 4037	3114
38	60cm.	Jung	1350/1 or 2034	0-6-2T 1, 2 or 3		a 5038	
38	Metre	Borsig	? 2-6-0			H 4038	3106
39	60cm.	Jung	1350/1 or 2034	0-6-2T 1, 2 or 3		a 5039	
40	60cm.	Jung/Henschel	9851-4 / 1852-7	0-6-0T ex 1-2, 17-23		b 5040	
41	60cm.	Jung/Henschel	" "			b 5041	
42	60cm.	Jung/Henschel	" "			b 5042	
43	60cm.	Jung/Henschel	" "			b 5043	
44	60cm.	Jung/Henschel	" "			b 5044	
45	60cm.	Jung/Henschel	" "			b 5045	
46	60cm.	Jung	1859-62 0-4-0T	ex 24-27		c 5046	
47	60cm.	Jung	1859-62 0-4-0T	ex 24-27		c 5047	
48	60cm.	Jung	1859-62 0-4-0T	ex 24-27		c 5048	
49	60cm.	Davenport	894 0-6-2T	ex 7 or 8		d 5049	
50	60cm.	Davenport	895 0-6-2T	ex 7 or 8		d 5050	
51	60cm.	O&K	5815? 0-6-0T	ex ?		e 5051	
52	60cm.	O&K	3992? 0-6-0T?	ex ?		f 5052	
53	60cm.	Henschel	7493? 0-4-0T	ex ?		g 5053	
54	60cm.	O&K	7120 0-6-2T	ex ?		h 5054	
	Metre	Borsig	6667 2-6-0	ex 452-6 Borsig 6663-7		T 4054	3115
55	Metre	Borsig	? 2-6-0			T 4055	
56	Metre	Borsig	? 2-6-0			H 4056	3107
57	Metre	O&K	? ?-6-?T	Loco from Otto Hear. Purchased second-hand by decree 375 of 31-12-1917.		? 4057?	
58	Metre	Borsig	? 2-6-0,	Possibly ex RN 3040 ex 383, which was sent south for use in Zona I during 1919.		H 4058	3108
59	Metre	?	? ?	Loco from Adolfo Moreno. Purchased second-hand by decree 2 of 2-1-1920. Price \$11,000 each.		? 4059?	
60	Metre	?	? ?	Loco from Adolfo Moreno. Purchased second-		? 4060?	

hand by decree 2 of 2-1-1920. Price \$11,000 each.

61 Metre Borsig ? 2-6-0, Probably another of the *RN tipo* H locos H 4061 3109
previously numbered 3037-41.

60s to 70s A number of *DOP* metre gauge locos had numbers in this range. Previous puzzles about which number series they formed part of might be solved if they were actually part of this series.

The 1921 re-numbering, and a later change

The southern network seems to have added 4000 to its metre gauge loco numbers at around the same time as the *Norte* added 3000 in the same way, but later re-numbered them into gaps in the latter sequence below 3010 and above 3097, so as not to clash with *Red Norte* engines [11]. This later re-numbering seems to have happened before the collection of information for the 1930 US report around 1928. The *Red Sur* also sometimes allocated *tipo* letters that were at odds with those given further north.

Known 4000 series engines:

Allen Copeland gives the following 4000 series locos in his list, but without any indication as to his source.

Tipo B

4-4-0 d/w 1140mm 45", cyls. 330x406mm 13"x16", built by Schneider in 1893

Builders' numbers 2556-2560. Originally *DOP / Lonj. Sur* locos 8-12.

8 '(PEDRO?) AMADO PISSIS' 27 4027 w/n 2556?

9 '?' 28 4028 w/n 2557?

10 'IGNACIO VALDIVIA' 29 4029 w/n 2558?

11 'ANDRES A. GORBEA' 30 4030 w/n 2559?

12 'JORJE MONTT' 31 4031 w/n 2560?

Later renumbered 3004-8, prior to 1939 [4]. All under *Zona II* (MSE) in 1939 [4].

Tipo E

2-8-0 d/w 910mm 36", cyls. 370x450mm 14¼"x17¾", built by Schneider in 1894

Five built in batch, see others at *Red Norte* nos. 3018-20. These two will have been the original *DOP / Lonj. Sur* nos. 13 and 14.

13 32? 4032 w/n ?

14 33? 4033 w/n ? Only identified as such in [26]. Note 4033 also listed above.

Tipo G

0-4-0T or 0-4-0ST d/w 33?", cyls. 11x16?", built by Hudswell Clarke

The source of Ian Thomson's information in source [11] is not known, but if it is true that this loco was a Hudswell Clarke product then it is more than possible that this was HC 389 ex the Huena Piden Colliery & Railway Co., see section 3.3.5, as that was the only Hudswell Clarke metre gauge 0-4-0 tank loco supplied to Chile. HC no. 389 had d/w 33" and cyls 11x16" and was an 0-4-0ST with outside cylinders built in 1891, according to the HC list.

? ? ? w/n 389 Ex 'HUENA PIDEN No. 1'? Probably withdrawn by 1940, as does not appear in 1941 *Red Sur* list, but see paragraph below.

A 1952 *Red Sur* table of loads permissible for locos on each line gives figures for *tipo* H, *tipo* D, and *tipo* G, on the Monte Aguila to Antuco branch, implying that those locos may have been the ones on that line at the time. However, this might not be the *tipo* G shown above. Hanomag 2-6-0s of *RN tipo* G were moved south in the 1940 or '50s, but initially were known there as *tipo* Q, perhaps because the original *RS tipo* G was still in service. Only later were the newcomers re-designated *tipo* G on the *Red Sur*. In the 1952 table of loads *tipo* G is shown as permitted to haul 40 tonnes in a mixed train and 60 tonnes in a goods train on the Monte Aguila to Polcura line, as compared with *tipo* H

hauling 120 / 140 tonnes and *tipo* D hauling 60 / 80 tonnes. This does indeed suggest that *tipo* G was a very small type of loco at that date.

Red Sur Borsig-built metre gauge classes

The *tipo* H and *tipo* T Borsig moguls listed below will have been from the following batches:

4 of Borsig nos. 5557-8?, 5566-7, of 1905, *EFE* **338-341**, in post-1908 diagram book as adh. wt. 24T, total wt. 28.2T.

4 of Borsig nos. 5793-4 & 5838, 5857 of 1905-6, *EFE* **383-386**, adh. wt. 24 or adh. 28T, total wt. 38T. (?)

4 of Borsig nos. 5952-5 of 1906, *EFE* nos. **422-425**, adh. wt. 24T, total wt. 28T.

5 of Borsig nos. 6663-7 of 1907-8, *EFE* nos. **452-456**, adh. wt. 26T, total wt. 30T.

Unfortunately the weights given tend to vary widely depending on the source, and thus it is difficult to know which batches were larger and which smaller. It seems possible that *tipo* H comprised all of the locos from the first three batches apart from a few in the corresponding *Red Norte tipo* H, whilst *tipo* T was made up of the five locos from the fourth batch.

Tipo H

2-6-0 d/w 1100mm, cyls. 360x550mm, built by Borsig in 1906

Supposedly renumbered to **3101-9** later. See above.

These locos were **7** **4007** w/n

probably from three **8** **4008** w/n

batches, with the **33** **4033** w/n

Note **4033** also listed below as a *tipo* E.

following works nos. **34** **4034** w/n

and 1902 series running **36** **4036** w/n

nos. 5557-8 & 5566-7 **38** **4038** w/n

which were **338-341**, **56** **4056** w/n

5793-4, 5838 & 5857 **58** **4058** w/n

which were **383-386**, **61** **4061** w/n

5952-5955

which were **422-425**.

A 1952 *Red Sur* table of loads permissible for locos on each line gives figures for *tipo* H, *tipo* D, and *tipo* G (See note below about the identity of this last loco), on the Monte Aguila - Antuco branch, implying that those locos may have been the ones on that line at the time.

Tipo T

2-6-0 d/w 1100mm, cyls. 360x550mm, built by Borsig in 1907

Later renumbered **3111-5**.

? **9** **4009** w/n

? **18** **4018** w/n

? **35** **4035** w/n

? **37** **4037** w/n

? **55** **4055** w/n

However, [21] lists Borsig 2-6-0 *tipo* T no **4054** later **3115**, ex **456**, as Borsig 6667 of 1907. A 1952 *Red Sur* table of loads permissible for locos on each line gives figures solely for *tipo* T on the San Felipe to Putaendo branch, implying that these locos may have been the only ones on that line at the time.

Other locos

The Rogers 2-8-0s later designated *tipo* R were largely on the La Calera to Cabildo line in the 1910s and in fact were known as the *Tipo consolidada Calera*. They would almost certainly have been numbered in this sequence at that time, as would the solitary Hanomag 2-8-0 that was bought for the Curicó to Hualañé line. It may be that only the first

seven Rogers locos ran on Calera to Cabildo, as in 1903 the line only had seven mainline engines, and the first seven clearly had been numbered **1-7** according to the 1919 RN list. The others had been numbered **22-23** and **33**, which may have been their numbers on one or other of the *ferrocarriles aislados*, or may indicate that they joined the *RS* at a later date and were thus numbered higher in the **RS** list.

It seems quite likely that three of the Baldwin 2-6-0s later designated as *tipo* L were *Red Sur* locos as two out of the three purchased by Chilean State railways had the original numbers **492** and **493**, and all three had later numbers **8**, **11** & **14**, which were probably in the above *Red Sur* sequence. However, number **8** was later used for a Borsig 2-6-0, which may mean that the Baldwin was moved elsewhere and that such vacant numbers were then filled by later arrivals. All three were later in the *RN* sequence, which tends to support this.

The Hanomag 2-6-0s later called *tipo* G started out as **549-553** in the *EFE* combined series. However, there are no known *RS* two-digit numbers for them.

Three second-hand locos from Otto Hear or Haer and Alfredo Moreno were purchased in 1917 and 1920, and were numbered **57** and **59-60**. The first was a six-coupled O&K that had previously been engaged on construction work at San Antonio but the others are as yet unidentified. The later cost \$7,753.47 *moneda corriente* each and so were presumably smaller or older than the O&K for which the agreed price was \$20,000.

The contractor Germain & Sierra's six Vulcan Ironworks 0-6-0s and 2-6-0s sold to the *EFE* may also have been in this list.

3.2.4 The full *EFE Red Norte* and *Red Sur* metre gauge lists, post 1921 (For rack and adhesion locos see the following section 3.2.5)

Sorting out and identifying the state railways metre gauge locos in the first decades of the 20th century is a complete nightmare. There were separate lists at times for each of the *ferrocarriles aislados* that made up parts of the eventual Longitudinal railway, and other lists for the *FC del Norte*, the *DOP*, the Elqui railway, etc. Locos got renumbered as they moved from line to line. As mentioned above, it seems that in 1902 it was decided to give new locomotives numbers in the hundreds in the same sequence as was being used for the broad gauge; but that did not imply that existing machines would be systematically renumbered, though in a few cases that that did happen. This policy was in effect at least until the arrival of the batch of Hanomag 2-6-0s in 1909, but they had been renumbered by 1912 as mentioned immediately above, so presumably other numbering systems took effect at that point.

The *EFE* absorbed the newly created *Red Norte* in 1916, and there may have been a further change in numbers at that time.

It was only in 1919 that one single sequence took effect on the new *Red Norte* [11]. This list began from **1**. What is certainly clear is that two years later, in 1921, 3000 was added to each of these numbers, thus creating the 3000+ series for the *Red Norte*. At the same time *Red Sur* metre gauge locos had 4000 added to their original numbers [5] [11], and *Red Sur* 60cm gauge locos similarly had 5000 added to each number. Later the 4000s seem to have been renumbered into gaps in the 3000 series, with later additions by construction and absorption. The 2000 series was allocated to electric locos for the broad gauge, eg. **2308-14**, though note the photo about five pages further on seeming to show a 2000 series number.

The net result of all the above was that individual locos commonly had borne four or five different numbers during the first twenty years of the 20th century. Where possible these numbers have been set out below, but with the final 3000 series number as the principal identifier. In the future it may be possible to sequence the earlier numbering patterns on each line, for original documents are still to be discovered in various archives. The first definite information comes from a *Red Norte* stocklist and allocation sheet of 1919, by which time the *FC del Norte* was operated by the *FCAB*. The list fortunately documents several of the earlier numbers for each loco, though it does not go back as far as the 1902 combined series listed above.

Columns 2, 3, and 4, below, show various earlier running numbers for each loco, as listed in 1919 [2]. The precise dates for each set of numbers can only be guessed at at this stage: Column 2 numbers were probably in the 1902 series or in local series once the 1902 system had been abandoned. Column 3 may well be post 1912 numbers, and column 4 post 1916. Column 5 shows the new 1919 number, and finally column 6 (or column 7 for *Red Sur* locos numbered **4xxx** in 1921, and only moved to **3xxx** later) shows this last with 3000 added to it as took effect in 1921. As the **3000** series remained in effect until the end of steam the whole of the following list is organised around that sequence. Lastly, in certain cases column 1 has been used to show any earlier numbers that are known, such as those in effect on delivery or the 1902 combined series if applicable.

1	2	3	4	5	6	7
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Red Sur Tipo B

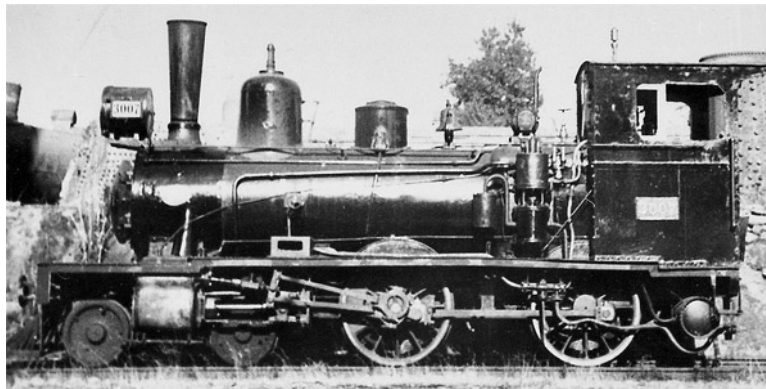
4-4-0 d/w 1140mm 45", cyls. 330x406mm 13"x16", built by Schneider in 1893

See nos. 4027-31. When *Red Sur* 4000 series locos were renumbered into the 3000s sometime during the 1920s or 30s, these engines received the numbers **3004-8**. Four of them had been on the Talca-Constitución line since new, and may well have spent their whole lives there.

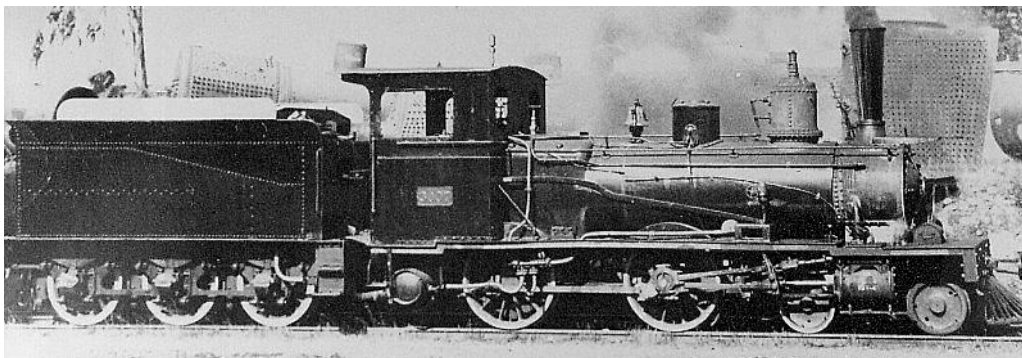
27	4027	3004	w/n 2556?	Under RS Zona II (MSE) in 1939, 1941, 1951 &
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28	4028	3005	w/n 2557?	1955. Appears in full <i>EFE</i> list for 1942 [27]. Under <i>RS Zona II</i> (MSE) in 1939, 1941, 1951 & 1955. Appears in full <i>EFE</i> list for 1942 [27].
29	4029	3006	w/n 2558?	Under <i>RS Zona II</i> (MSE) in 1939, 1941 & 1951. Not in 1955 list. Appears in full <i>EFE</i> list for 1942 [27]. A relatively late photo, perhaps taken in the 1950s, shows this loco at Curicó loco shed, presumably for use on the line to Hualañé and Licantén.
30	4030	3007	w/n 2559?	Under <i>RS Zona II</i> (MSE) in 1939, 1941 & 1951. Not in 1955 list. Appears in full <i>EFE</i> list for 1942 [27].
31	4031	3008	w/n 2560?	Under <i>RS Zona II</i> (MSE) in 1939, 1941, 1951 & 1955. Appears in full <i>EFE</i> list for 1942 [27].

[19] also shows *tipo B* nos. **3004-3008** in service in 1950s (?).



This image, showing no. **3007**, has modifications including the air pump moved back from the smokebox, a larger cab window and a different dome cover. The tender is not attached.



This photo shows the opposite side of no. **3007**.

No details known

3009	w/n ?	<i>Excluidas</i> 1929 [3]. Sold to Braden Copper Co. in 1931 presumably for scrap [3].
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Grupo 3, later tipo A

0-6-0T d/w 800mm, cyls. 270mmx260mm, built by St. Leonard in 1891

Supposedly from a batch numbered **1-6**, when first delivered. w/n were 895-900. Cyls. possibly 270x300mm. [26] assumes road numbers were in construction order.

25	60	10	10	3010	Working at <i>patio Illapel</i> and on ballast trains in 1919. Not
-----------	-----------	-----------	-----------	-------------	--

RC 59 9 11 3011

shown in 1942 *Red Norte* list.

Working at *patio Illapel* and on ballast trains in 1919. The initials **RC** suggest that this was the original no. **3**

‘**RICARDO CUMMING**’, which was w/n 897. Not shown in 1942 *Red Norte* list.

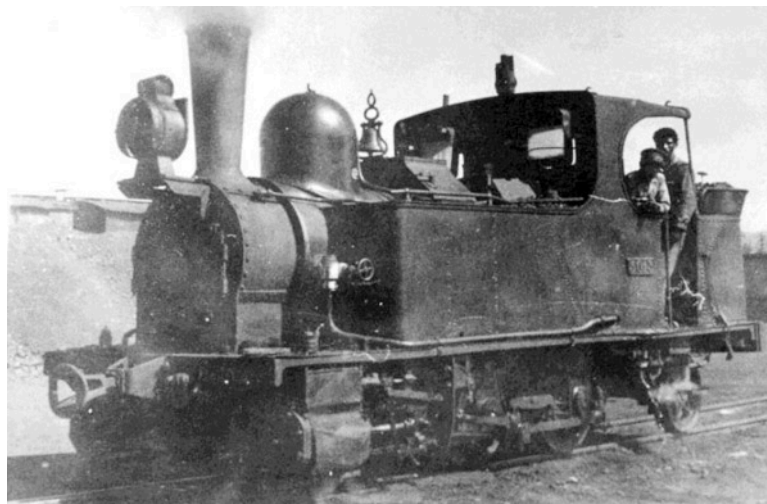
1 62 12 12 3012

Ex no. **1**, working on the Los Vilos line in 1912 as an 0-6-0TT [11]. No. **1** was originally named ‘**TOMÁS ECHEVARRÍA**’ and was w/n 895. Working at *patio Ovalle* and on ballast trains in 1919. Appears in full *EFE* list for 1942 [27]. Under supervision of maestranza Coquimbo in 1951 [13]. Leased to *FCALP* in 1951. Listed in itinerario fleet list in 1952. At Arica on *FCALP* in 1955, when was working with a tender [50].

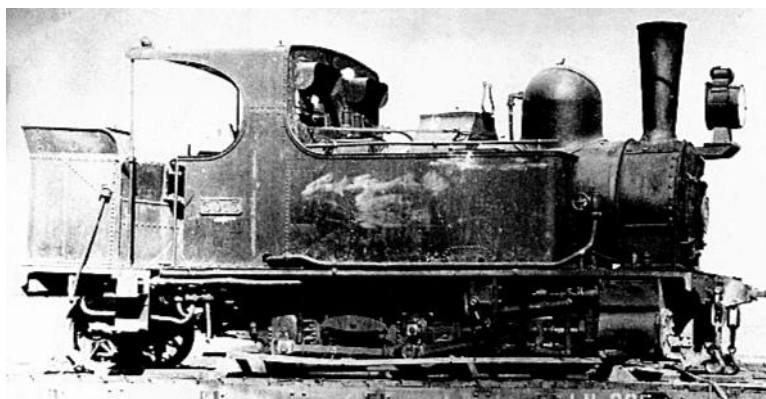
97 ? 13 13 3013

Working at *patio Calera* and on ballast trains in 1919 [5]. Appears in full *EFE* list for 1942 [27]. Under supervision of maestranza Coquimbo in 1951 [13]. Leased to *FCALP* in 1951. Listed in itinerario fleet list in 1952. At Arica on *FCALP* in 1955, and confirmed in service by [19]. [50] also confirms it had worked on *FCALP*. Withdrawn from *FCALP* in 1957 [38]. [16] says scrapped in 1960s. At least two photos show that this engine was rebuilt at some point with a large rear bunker supported by a trailing truck, thus turning the loco into an 0-6-2T. This was not mentioned in 19052 when the loco was clearly listed as an 0-6-0T.

4 in fleet at 1-1-1921, 1930 US report says two active and two out of use. 4 still in fleet in 1942 according to [11] but [26] [27] list only **3012** and **3013** that year. Only **3012-3** in 1951 lists, and in 1952 *RN* list.



No. **3013** shown with added rear bunker and a trailing truck, making it an 0-6-2T. It also carries an improvised boiler-top sandbox and a rather decorative bell mounting. The boiler feed pipe around the outside of the tank appears rather improvised.



This photo had been taken when the loco was mounted on a broad gauge flat wagon, probably at MSB.

Grupo 4, later tipo B

0-6-0T d/w 742mm?, cyls. 273x390mm?, built by Corpet in 1880?

Dimensions from Jens Schindler's list, source unknown. [MOBR1128] clearly says Corpet of Paris. Corpet Louvet list does not show any locos for *EFE*, but they may have gone via an agent. I had thought that this loco might have been imported after use elsewhere by *La Regie Générale de Chemins de Fer et Travaux Publics* who were contractors under the Howard Syndicate for construction between Papudo and Copiapó around 1910-14. However, the loco was clearly in Chile rather earlier than that. The 1930 US report implies that this might have been a Koppel loco rather than a Corpet. If the details there were correct then the dimensions were d/w 30", cyls. 310x349mm.

2 99 14 14 3014? w/n ? Working at *patio* Chañaral and on ballast trains in 1919.

15 3015? w/n ? Not on *Red Norte* in 1921 [51].

1 in fleet at 1-1-1921, no. 3014, 1930 US report says one loco in fleet but out of use. None in fleet in 1942 [11] [26] [27] or 1951.

Grupo 5, later tipo C

2-4-0T d/w 916mm 36", cyls. 240mmx457mm 9½"x18", built by Neilson in 1878

1919 RN list has this as by (Naismith?) Wilson. However loco appears clearly in the Neilson list [5].

27 101 16 3016 w/n 2381 Ex Mathieson & Beausire of Iquique (who may merely have been agents), and possibly then *FC de Elqui* no. 4 'LA COMPAÑIA'. After state takeover probably became *DOP* no. 14 'EL MOLLE' 1919 list says this loco was working at *patio* Coquimbo and on ballast trains [5].

1 in fleet at 1-1-1921, no. 3016. 1930 US report says one loco in fleet but out of use. None in fleet in 1942 [11] [26] [27] or 1951. However, a variety of other small locos were later allocated to tipo C when they were absorbed by the *EFE* in the 1940s. See below.

Grupo 6, later tipo D

2-4-2 d/w 1250mm 49¼", cyls. 356mmx457mm 14"x18", built by Rogers in 1897

Delivered via W. R. Grace. Originally a 2-4-0.

298 47 18 17 3017 w/n 5189 Had the name 'PALOS QUEMADOS' in earlier years. Working at *patio* Chañaral and on ballast trains in 1919.

1 in fleet at 1-1-1921, 1930 US report says one loco in fleet but out of use. None in fleet in 1942 [11] [26] [27] or 1951. See also tipo D locos at numbers 3121 and 3122.

Grupo 7, later tipo E

2-8-0 d/w 910mm, cyls. 370mmx450mm, built by Schneider in 1894

At least one of the missing pair of locos from this batch of five was working on the *Red Sur* numbered **4032**, but had disappeared from the *Red Sur* list by 1939. The fifth, **13 ‘WALDO SILVA’**, had worked for the *DOP* until 1914 when it was recorded as 'to *EFE* ‘*entregado provisionario*’. Its later history seems also to have involved time on the *Red Sur*.

15 51 90 18 3018 w/n from 2563. Loaned to *DOP* 1929. Transferred to *DOP* in 1930, but returned in 1931 [3].

16 52 91 19 3019 w/n from 2564.

17 53 92 20 3020 w/n from 2565. *Excluidas* 1929 [3]. Sold to Braden Copper Co. for scrapping in 1931 [3].

1919 list says all three were on the branches to Huasco and Pedro L. Gallo. 3 in fleet at 1-1-1921, nos. **3018-20**. 1930 US report says three locos in fleet but only one in use, one out of use, and one rented or loaned out. None in fleet in 1942 [11] [26] [27] or 1951.

Grupo 8, later tipo F

0-6-4T d/w 864mm 34", cyls. 381mmx457mm 15"x18", built by Hunslet in 1910 (first 9) and 1912 (last 1)

Batch ordered for Howard Syndicate construction work by Griffith & Co. on Longitudinal railway [11].

1 11 21 21 3021 w/n 1040 Working at *patio* Calera and on ballast trains in 1919 [5]. Loco with this no. sold to Braden Copper Co. in 1929 presumably for scrap [2]. Shown in 1942 *Red Norte* list. Under supervision of *maestranza* Coquimbo in 1951 [13]. Listed in [19] in mid 1950s.

2 12 22 22 3022 w/n 1044 Working at *patio* Ovalle and on ballast trains in 1919 [5]. Shown in 1942 *Red Norte* list. Under supervision of *maestranza* Coquimbo in 1951 [13]. Listed in [19] in mid 1950s, and was still in use in the 1950s.

3 13 23 23 3023 w/n 1047 Working at *patio* Coquimbo and on ballast trains in 1919 [5]. Shown in 1942 *Red Norte* list. Under supervision of *maestranza* Coquimbo in 1951 [13]. Listed in [19] in mid 1950s.

4 14 24 24 3024 w/n 1048 Working at *patio* Ovalle and on ballast trains in 1919 [5]. Overturned on collision with a light lorry in Chañaral town at some point. Shown in 1942 *Red Norte* list. Under supervision of *maestranza* Coquimbo in 1951 [13]. Listed in [19] in mid 1950s.

5 15 25 25 3025 w/n 1049 Working at *patio* Calera and on ballast trains in 1919 [5]. Shown in 1942 *Red Norte* list. Under supervision of *maestranza* Coquimbo in 1951 [13]. Listed in [19] in mid 1950s.

6 16 26 26 3026 w/n 1050 Working at *patio* Copiapó and on ballast trains in 1919 [5]. Shown in 1942 *Red Norte* list. Under supervision of *maestranza* Coquimbo in 1951 [13]. Listed in [19] in mid 1950s.

7 17 27 27 3027 w/n 1057 Working at *patio* Coquimbo and on ballast trains in 1919 [5]. Diagram F has the note “**3027** sold to Arica-La Paz in 1923” Not shown in 1942 *Red Norte* list. [50] confirms it had been on *FCALP* at some stage. Unlike all the others in this batch,

8 18 28 28 3028 w/n 1058

this engine was not listed in the 1952 itinerario fleet list. Working at *patio* Calera and on ballast trains in 1919 [5]. Shown in 1942 *Red Norte* list. Under supervision of *maestranza* Coquimbo in 1951 [13]. Listed in [19] in mid 1950s.

9 19 29 29 3029 w/n 1059

Working at *patio* Coquimbo and on ballast trains in 1919 [5]. Shown in 1942 *Red Norte* list. Under supervision of *maestranza* Coquimbo in 1951 [13]. Listed in [19] in mid 1950s.

10 20 30 30 3030 w/n 1064

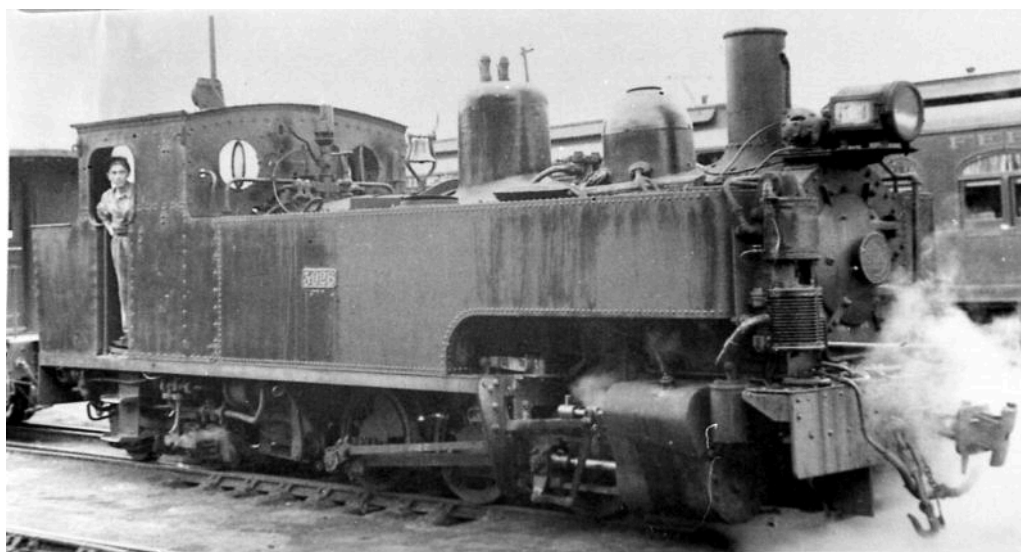
Working at *patio* Copiapó and on ballast trains in 1919 [5]. Shown in 1942 *Red Norte* list. Under supervision of *maestranza* Coquimbo in 1951 [13]. Listed in [19] in mid 1950s. [50] confirms it had been on *FCALP* at some stage.

[11] says 10 in fleet at 1-1-1921, nos. **3021-30**. 1930 US report says nine locos in fleet and in use. Nine in fleet in 1942 [4] [11] [26] [27]. Nine listed in 1951 list, and in 1952 *RN* list..

An 0-6-4T at Arica on the *FCALP* in 1955 bore the number

3031

This will have been one of the ex MacDonald, Gibbs & MacDougall Hunslet locos that had then worked on the *FCNC*. *EFE memoria* for 1920 p377 states that a loco **3031** belonged to the *DOP* at that time. Withdrawn from *FCALP* in 1957



Tipo F no. **3026**.

Grupo 9, later tipo S?

2-8-0 d/w ?, cyls. ?, built by Hanomag in 1913

42 tonnes. Ordered 30th December 1912 specifically for the Curicó to Hualañé branch of the *Red Sur*. Other tenders received from Jung, Couillet and Henschel. The Hanomag list gives the running number **75**, but **24** and **31** appear for a Hanomag 2-8-0 in the 1919 *Red Norte* loco list, implying that this engine would have become **3031** in the 1921 series. However, a similar engine appears a few pages further on as *Grupo 22*. There was only one such loco supplied, and therefore it seems that they are one and the same. This is a mystery.

75 ‘HUALAÑE’ 75 24 31 ? w/n 6944

Working on the *Línea Central* between Vallenar and Pueblo Hundido in 1919 [5]. Not on *Red Norte* in 1921 [51], or at least not with number **3031**.

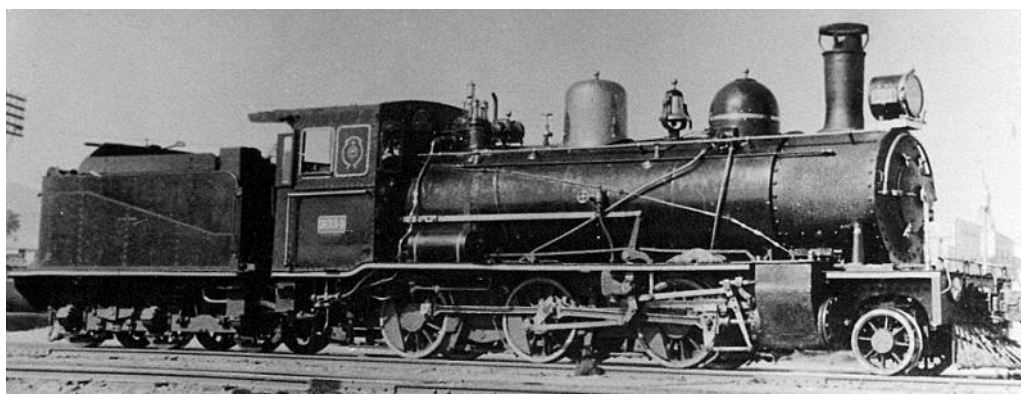
Grupo 10, later tipo G

2-6-0s d/w 1105mm 43½", cyls. 410x560mm , built by Hanomag in 1906

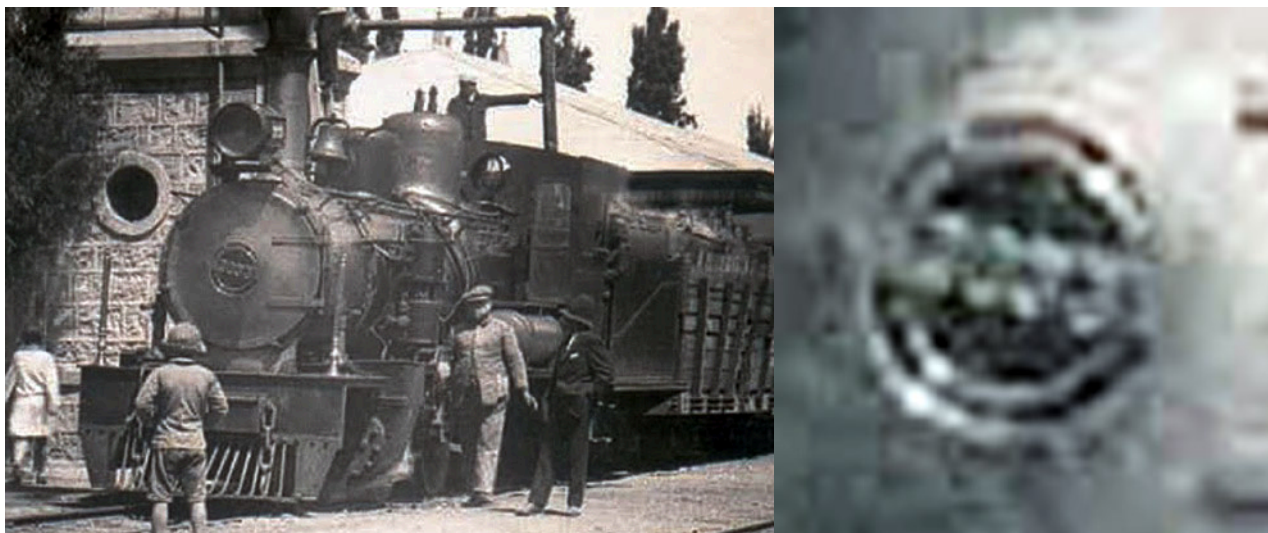
1919 list says all working on Elqui/Rivadavia branch.

549	32	32	3032	w/n 5392	Transferred to <i>Red Sur</i> later and originally classified there as <i>tipo</i> Q, later <i>tipo</i> G from 1950s. However, shown in 1942 <i>Red Norte</i> list. Under supervision of maestranza Coquimbo in 1951 [13]. Listed in [19] in mid 1950s. Reincorporated into active fleet 1957 [38],
550	33	33	3033	w/n 5393	Shown in 1942 <i>Red Norte</i> list. Under supervision of maestranza Coquimbo in 1951 [13]. Listed in [19] in mid 1950s.
551	34	34	3034	w/n 5394	Shown in 1942 <i>Red Norte</i> list. Under supervision of maestranza Coquimbo in 1951 [13]. Listed in [19] in mid 1950s. A photo of this loco carrying the 3034 number shows it with a different boiler, having the steam-dome above the centre driving wheels rather than over the firebox as originally built, and also the firebox being round-topped rather than belpaire.
552	35	35	3035	w/n 5395	Transferred to <i>Red Sur</i> later and originally classified there as <i>tipo</i> Q, later <i>tipo</i> G from early 1950s, though still listed as <i>tipo</i> Q in 1951. However, shown in 1942 <i>Red Norte</i> list. Under Concepción supervision 1951 & 1955. Listed in [19] in mid 1950s. Reincorporated into active fleet 1957 [38],
553	36	36	3036	w/n 5396	Shown in 1942 <i>Red Norte</i> list. Under supervision of maestranza Coquimbo in 1951 [13]. Listed in [19] in mid 1950s.

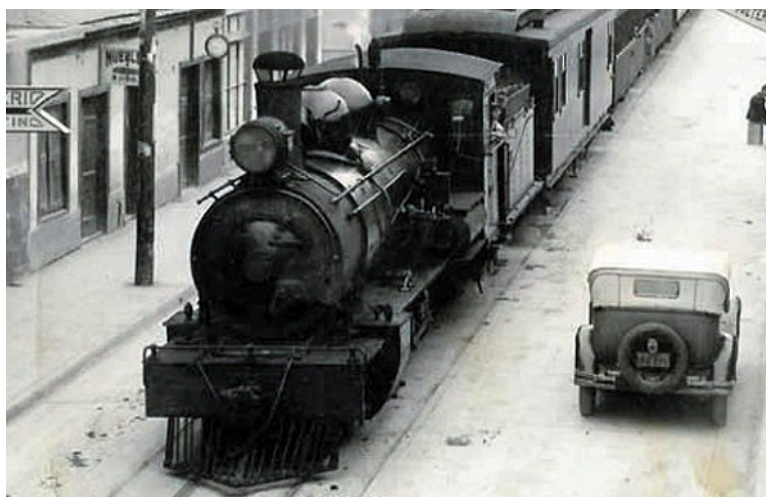
5 in fleet at 1-1-1921, nos. **3032-36**, and 5 still in fleet in 1930 [US report] and 1942 [11] [26] [27]. Four in 1951 *RN* list **3032, 3033, 3034, 3036**. One in *Red Sur* fleet in 1957 [*EFE memoria anual*], and one in 1960. 1952 *RN* list includes **3032, 3033, 3034**, and **3036**. **3032** listed under San Eugenio in 1955 list.



Reboilered tipo G no. 3034.



This photo taken on the Elqui line suggests that the air tank beneath the left-hand running board in front of the cab was later relocated above the running board in the same area, possibly to improve access to the motion. The same photo seems to show the smokebox number-plate with the number **2033**, rather than **3033** as would have been expected.



This locomotive seen hauling a passenger train down Calle Aldunate in Coquimbo was most probably a reboilered *tipo G* 2-6-0. The exposed valve chest tops, running plate steps and air tank above the running plate all recall the photo immediately above, but the boiler is of a larger diameter, with a round-top firebox and a hemi-spherical dome halfway along the barrel.

Grupo 11, later tipo H

2-6-0 d/w 1100mm, cyls. 360x550mm, built by Borsig in 1906

	8	90	37	37	3037	w/n	Working on the Salamanca branch in 1919 [5].
386?	550	5857	38	38	3038	w/n 5857	Working on the Salamanca branch in 1919 [5]. Used by <i>DOP</i> before that.
	341		39	39	3039	w/n 5567	Working on the Salamanca branch in 1919 [5].
	383		40	40	3040?	w/n 5793	' <i>Será entregada a la I zona</i> ' in 1919. May therefore not have become 3040 . <i>EFE memoria</i> for 1920 p377 states that a loco 3040 belonged to the <i>DOP</i> at that time. However, a loco 3040 was <i>excluidas</i> 1929 [3].
					41	3041? w/n ?	Probably also did not receive the number 3041 , perhaps after transfer elsewhere. <i>EFE memoria</i> for 1920 p377 states that a

loco **3041** belonged to the *DOP* at that time.

3 in fleet at 1-1-1921, nos. **3037-39**, but none in *RN* fleet in 1942 [11] [26]. Strangely, none listed in 1942 list that supposedly includes both *RN* and *RS* [27]. One report suggests **3037-39** were transferred south during the 1920s. Three in *Red Sur* fleet in 1957 [*EFE memoria anual*], and three in 1960.

Grupo 21, later tipo I [5]

2-6-0 d/w 1219mm 48", cyls. 381x559mm 15"x22", built by Lima in 1905 and 1908

100? **40** **3040** w/n 1021

ex-*DOP* **100**, 'Entregada' to *DOP* in 1930 [3]. In Lima list as for Chile State Rly, no. **100**. [11] says this loco was on Los Vilos line in 1912, but there is some doubt about the reliability of that. On *Red Norte* in 1921 [51]. *EFE memoria* for 1920 p377 states that a loco **3040** belonged to the *DOP* at that time.

'NAHUELBUTA' **15?** **3041?** w/n 1074

1912 & 1914 from *DOP* to *EFE* "entregada provisorio". On *Red Norte* in 1921 [51]. *EFE memoria* for 1920 p377 states that a loco **3041** belonged to the *DOP* at that time.

2 in fleet at 1-1-1921, nos. **3040-41**, 1930 US report says one loco in fleet but loaned out (presumably to *DOP*). None in *RN* fleet in 1942 [11] [26], or in full *RN* and *RS* list from 1942 [27]. See also no. **3091**, below.



The photo here seems to show one of these two engines on the Elqui line at an unknown date, albeit with a replacement cab, bell and chimney.

Grupo 12, later tipo J

4-6-0 d/w 1050mm 41¼, cyls. 330x510mm 13"x22", built by Black Hawthorn from 1883

Ex *FC de Elqui*.

? **?** **?** **?** w/n 751

Ex *FC de Elqui* No. **1 'ELQUI'**. Not listed on *RN* in 1919. This loco was certainly working for the *DOP* in 1910 and 1912, and may well have continued in that role to the end of the decade or later.

23 **66** **42** **42** **3042** w/n 752

Ex *FC de Elqui* no. **2 'La SERENA'**. Working on the Tongoy branch in 1919 [5]. On *Red Norte* in 1921 [51].

24 **67** **43** **43** **3043** w/n 878

Built 1886. Ex *FC de Elqui* no. **3 'La RIVADAVIA'**. Working on the Tongoy branch in 1919 [5]. On *Red Norte* in 1921 [51].

2 in stock at 1-1-1921, nos. **3042-43**, but none in stock in 1930 [US report] or 1942 [11] [26] [27].

Grupo 13, later tipo K

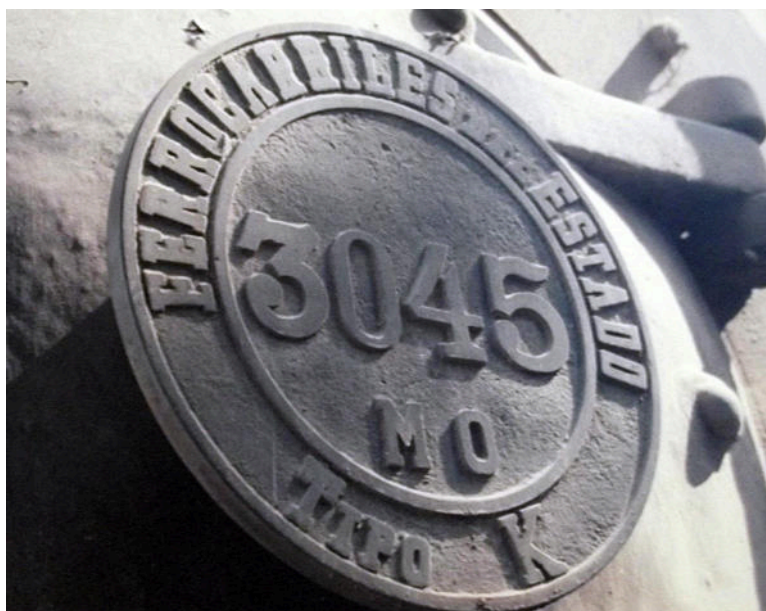
2-6-2T d/w 1100mm, cyls. 360x550mm, by Borsig in 1906

Dimensions from Jens Schindler's list, source unknown.

- 15 'MARQUESA' 387? 41 44 44 3044** w/n 5896 In use on Coquimbo system in 1906 [MOBR3079] and 1907 [MOBR1910] when the frames were being straightened. The running number was **15** at that time. (ex **386** acc. to Copeland), Working on the Juntas branch in 1919 [5]. On *Red Norte* in 1921 [51]. *Excluidas* 1929 [3]. Rented to *Fabrica de Cemento El Melón* in 1930 [3], but then recorded as returned and transferred from *Red Norte* to *Red Sur* in 1931. Shown in 1942 *Red Norte* list. Under supervision of maestranza Coquimbo in 1951 [13]. (*Cemento El Melón* then bought their own new Borsig 2-6-2T in 1931, no. 14003). Listed in itinerario fleet list in 1952. Listed in [19] in mid 1950s.
- 16 'ALTOVALSOL' 386? 45 45 3045** w/n 5897 In use on Coquimbo system in 1906 [MOBR3079]. (ex **387** acc. to Copeland), Working on the Juntas branch in 1919 [5]. On *Red Norte* in 1921 [51]. *Excluidas* 1929 [3]. Shown in 1942 *Red Norte* list. Under supervision of maestranza Coquimbo in 1951 [13]. Listed in itinerario fleet list in 1952. Listed in [19] in mid 1950s. Now in Quinta Normal museum.
- 2 in service at 1-1-1921, nos. **3044-45**, and 2 in stock in 1930 [US report] and in *RN* fleet in 1942 [11] [26], 1951 and 1952. Also both in full 1942 list [27].



MCC's own photo, taken at Quinta Normal museum.



The smokebox numberplate of no. **3045**, with the inscription 'MO' indicating that the engine had been under the supervision of Maestranza Ovalle.

Grupo 14, later tipo L

2-6-0 d/w 1066mm 42", cyls. 381x457mm 15"x18", built by Baldwin in 1905-7

These were BLW class 8-24D. Three were purchased by the Chilean State Railways according to BLW spec book 27, 8-24D nos. 131, 134 & 141. However only BLW works nos. 25022 and 27319 show up in Connolly's Baldwin list. The other might be 24756 supplied to the agent Beeche Duval & Co., which was a stage in the Beeche i Cia., Wessel Duval & Co. dynasty, who were agents in Chile for Baldwin. Slightly later, after 1907, the *DOP* bought second-hand from the *Sindicato de Obras Públicas* three more metre gauge 8-24D locos, their nos. **12**, **11**, and **10** with works nos. 30452, 30473-4. One or more of the following engines were probably from that source. '**VALIENTE**' means brave. That name might have been allocated by the *SOP*, or by the *DOP*.

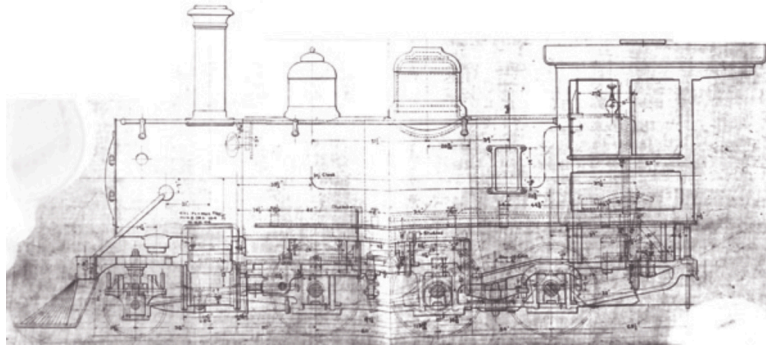
492 **8** **50** **46** **46** **3046** w/n 25022 of 1905. Working on branches to Huasco and Pedro L. Gallo in 1919 [5]. On *Red Norte* in 1920 [51]. In use by *DOP* on Iquique to Pintados line in 1930 [1]. '*Prestan servicio en Refuerzo de Puentes, desde octubre de 1942*' through to 1951 at least.

11 **89** **47** **47** **3047** w/n ? of 1907? Working on the Los Vilos line in 1912 [11]. Working on branch to Huasco and Pedro L. Gallo in 1919 [5]. '*De la DOP*' [5]. On *Red Norte* in 1920 [51]. '*Prestan servicio en Refuerzo de Puentes, desde octubre de 1942*' through to 1951 at least.

493 **14** **94** **48** **48** **3048** w/n 27319 of 1906 Working on branches to Huasco and Pedro L. Gallo in 1919 [5]. '*De la DOP*' [5]. On *Red Norte* in 1920 [51]. *EFE memoria* for 1920 p377 states that a loco **3048** belonged to the *DOP* at that time. In use by *DOP* on Iquique to Pintados line in 1930 [1].

'**VALIENTE**' **49** **49** **3049** w/n? of 1907? ex-?? Listed in 1919 [5] but not anoted with 3000 series number, unlike the others. On *Red Norte* in 1920 [51].

However, 4 in stock at 1-1-1921, nos. **3046-49**. 1930 US report mentions this class but lists none in fleet. None in fleet in 1942 [11] [26] [27].



Side elevation drawing copied from a BLW blueprint in the Dewhurst archive at the NRM in York.



This image from the collection of Señor Jair Larenas shows **3046** lying on its side after a tsunami, probably 10th November 1922 in Chañaral.

At this point in the sequence the 1930 US report mentions one Rogers 2-2-0 in service of 7.2 or 4.2 tons, with d/w 695mm, cyls. 118x304mm. These dimensions equate to approx 27½", and 4¾x12", are very close indeed to those of ex *FC de Copiapó* standard gauge Rogers 2-2-0T **25 'TOMÁS R. GALLO'** of 1869, which became *EFE* no. **9A** and later no. **3200**. This seems to confirm that this loco was indeed converted to metre gauge. No sign of this in any later lists.

Ex FCTC class K, EFE tipo K

0-6-0T d/w 39", cyls 14.5"x20", built by Hawthorn Leslie in 1889

1 ? ? ? 50 3050 w/n 2140

Ex FCTC no. **1**. At Los Andes until 1963 or 1964 and then scrapped. Listed in [19] in mid 1950s as *tipo K*. Not in supposedly full list in 1942 [27], but FCTC locos may only have entered the EFE numbering sequence in 1946. In *EFE* 1955 list as on *Trasandino*.



Photo courtesy of Jens Schindler. The engine is now air-braked, with a cylinder on the cab roof, and has a narrow sand-dome probably borrowed from some other type of loco.

Grupo 15, later tipo M

4-6-0 d/w 1219mm 48", cyls. 406mmx559mm 16"x22", built by Lever Murphy 1899/1900, 'Pasajero, con tender'

A batch of five were built.

18 23 51 51 3051

Had been '**FEDERICO ERRÁZURIZ**'. *DOP* loco at one time. On La Serena local services in 1919 [5], but another source suggests that this engine was sent to Arica in 1909 [MOBR????]. On *Red Norte* in 1920 [51]. *Excluidas* 1929 [3]. Loco with this no. sold to Braden Copper Co. in 1929 presumably for scrap [2]. See note in *FCALP* section about a scrapped loco there in 1955.

19 24 52 52 3052

Had been '**JUAN A. SIMPSON**'. *DOP* loco at one time. On La Serena local services in 1919 [5]. On *Red Norte* in 1920 [51]. *Excluidas* 1929 [3]. Loco with this no. sold to Braden Copper Co. in 1929 presumably for scrap [2].

8 28 53 53 3053

In 1904 the Chañaral railway complained that this loco could not cope with their curves [11]. Derailed that September, killing the fireman [11]. On La Serena local services in 1919 [5]. On *Red Norte* in 1920 [51].

9 29 54 54 3054

On La Serena local services in 1919 [5]. On *Red Norte* in 1920 [51]. Sold to Braden Copper Co. in 1931 presumably for scrap [3].

4 in fleet at 1-1-1921, nos. **3051-54**. 1930 US report says three locos in fleet but out of use. None in *RN* fleet in 1942 [11] [26], or in full list from 1942 [27].

Several of these *tipo M* & *N* locos above and below, seem to have been used by the *DOP* at various times. See notes above.

Grupo 16, later tipo N

4-6-0 d/w 1016mm 40", cyls. 406x457mm 16"x18", built by Lever Murphy in 1899/1900, 'Carga, con tender'

A batch of five were built.

27 24/21? 55 55 3055

On Los Vilos line in 1912 [11]. On La Serena local services

21? 25 56 56 3056

10 26 57 57 3057

11 27 58 58 3058

? ? ? ? 3059

in 1919 [5]. In service 1920 [51] and 1921 [11]. Sold to Braden Copper Co. in 1931 presumably for scrap [3]. Had been ‘**MANUEL A. MATTA**’ [14]. Was a *DOP* loco at one time. On La Serena local services in 1919 [5]. In service 1920 [51] and 1921 [11]. *Excluidas* 1929 [3]. Sold to Braden Copper Co. in 1931 presumably for scrap [3]. Had been ‘**JULIO BAÑADOS ESPINOZA**’ [14]. On La Serena local services in 1919 [5]. In service 1920 [51] and 1921 [11]. Replacement boiler to be purchased 1922 [MFER157]. Off list by 1942 [11]. Had been ‘**FERNANDO LAZCANO**’ [14]. On Los Vilos railway in 1912 [11]. On La Serena local services in 1919 [5]. In service 1920 [51] and 1921 [11]. Replacement boiler to be purchased 1922 [MFER157]. Off list by 1942 [11]. Not listed on *RN* in 1919. On *Red Norte* in 1920 [51]. *Excluidas* 1929 [3]. Sold to Braden Copper Co. in 1931 presumably for scrap [3].

Two boilers for this type of loco (“nos. **3057** y **3058**” mentioned) authorised to be purchased in 1922 [MFER157]. 1930 US report says two locos in fleet but out of use. None in *RN* stock in 1942 [11] [26]. None in full 1942 list [27].

Grupo ?, later tipo F

0-6-4T d/w 864mm 34", cyls. 381x457mm 15"x18", by Hunslet in 1912

? ? 60 3060 w/n 1065

ex *FCALP*; *FCNC* 3. Not listed on *RN* in 1919 or 1920 [51]. On *FCALP* at Arica in 1955. Listed in [19] in mid 1950s. Withdrawn from *FCALP* in 1957 [38]. [50] confirms it had been on *FCALP* at some stage.

? ? 61 3061 w/n 1078

ex *FCALP*?; *FCNC* 4. Not listed on *RN* in 1919 or 1920 [51]. On *FCALP* at Arica in 1955. **3031** was listed as a *tipo F* in mid 1950s [19]. This might be a mistake for **3061**. [50] confirms it had been on *FCALP* at some stage.

Neither of these two listed in supposedly full *EFE* list for 1942 [27]. See also other locos of this type as numbers **3021-3030**.

Grupo 17, later tipo O

2-6-0 d/w 1105mm 43½, cyls. 410x450mm, built by O&K in 1910

The only possible O&K locos built around 1910 were the batch of six constructed for the *DOP*, their nos. **21-26** and O&K w/n 3971-6. Three of these had been sold on by the *DOP* to the Howard Syndicate for use during the *Lonj. Sur* construction, but may well have been purchased back again at the end of that work. The second *DOP* section above explains that the locos numbered **22** and **26** became nos. **61** and **60**. It looks as though the others may have become **62-65**. What is not yet clear is whether the three listed here were those that went to the Howard Syndicate or the other three.

65 ? 62 62 3062 w/n ?

ex-*FCALP*?; *FCNC*? Working on Socavón to Matancillas section of Línea Central in 1919 [5]. On *Red Norte* in 1920 [51]. Had a *tipo F* tender in 1942 [26] and 1952. This is puzzling as *Tipo F* locos were tank locos, though several had been fitted with ex *FCAB* tenders at some point. Under Coquimbo supervision 1951. Listed in itinerario fleet list in 1952, as having *tipo F* tender (?).

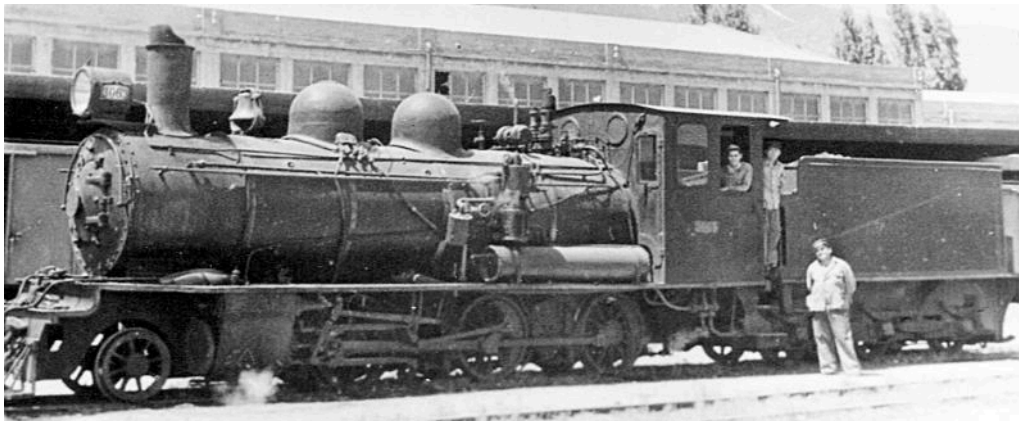
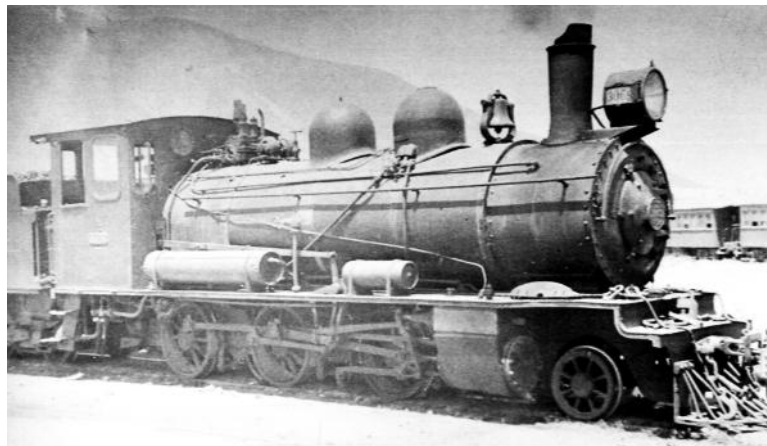
63 ? 63 63 3063 w/n ?

Working on Socavón to Matancillas section of Línea Central in 1919 [5]. On *Red Norte* in 1920 [51]. Transferred from *Red Norte* to *Red Sur* in 1931 and back? in 1933 [3]. Had a *tipo Q* tender in 1942 [26] and 1952. Under Coquimbo supervision 1951. Listed in itinerario fleet list in 1952, as having *tipo Q* tender (?).

64 ? 64 64 3064 w/n ?

Working on Socavón to Matancillas section of Línea Central in 1919 [5]. On *Red Norte* in 1920 [51]. Transferred from *Red Sur* to *Red Norte* in 1933 [3]. Presumably had own type of tender in 1942 [26] and 1952 as no note to contrary. Under Coquimbo supervision 1951. Listed in itinerario fleet list in 1952, with no reference to any specific type of tender.

3 in stock at 1-1-1921, nos. **3062-64**, and 3 in stock in 1930 [US report] and 1942 [11] [26] [27]. 3 in *RN* lists from 1951 and 1952. Three still listed in [19] in mid 1950s.



Grupo 18, later tipo P

2-8-0 d/w 1000mm, cyls. 430x500mm, built by Borsig in 1906

Copeland and [21] says ex **426-431**. Merte's lists says completed 28-7-1906 (first 2) 10-8-1906 (last 2) and '*Chilenische Staatseisenbahn für Calera-Cabildo Eisenbahn 426-431*'. **426-7** and **431** may have become nos. **10-12** but in that case there must be doubt over whether the **30xx** nos. and the works nos. match up correctly.

428 42 65 65 3065 w/n 5958?

On branch to Papudo in 1919 [5]. On *Red Norte* in 1920 [51]. Listed on RS, under MSE supervision in 1951.

429 43 66 66 3066 w/n 5959?

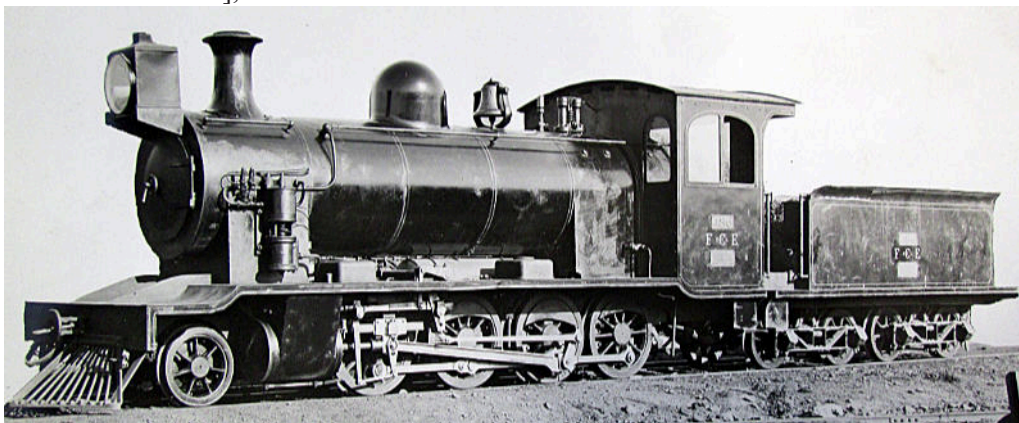
On branch to Papudo in 1919 [5]. On *Red Norte* in 1920 [51]. Listed on RS, under MSE supervision in 1951. Under San Eugenio in 1955.

430 44 67 67 3067 w/n 5960?

On branch to Papudo in 1919 [5]. On *Red Norte* in 1920 [51]. Listed on RS, under MSE supervision in 1951.

10	91	68	68	3068	w/n 5956?	On Los Vilos section in 1919 [5]. On <i>Red Norte</i> in 1920 [51]. Listed on RS, under MSE supervision in 1951. Under San Eugenio in 1955.
11	92	69	69	3069	w/n 5957?	On Los Vilos section in 1919 [5]. On <i>Red Norte</i> in 1920 [51]. Listed on RS, under MSE supervision in 1951.
12	93	70	70	3070	w/n 5961?	On Los Vilos section in 1919 [5]. On <i>Red Norte</i> in 1920 [51]. Listed on RS, under MSE supervision in 1951.

6 in stock at 1-1-1921, nos. **3065-70**. 1930 US report says six locos in fleet and in use. A 1934 photo of a train on the *Red Sur* Talca to San Clemente branch shows one of these locos, as does a 1950s picture taken in Constitución. All were under supervision of San Eugenio in 1939 [4], 1941 and 1951. None in *RN* stock in 1942 [11] [26]. All six in full 1942 list [27], as *tipo* P. All six listed in [19] in mid 1950s, and still as *tipo* P, presumably because the latter list covered all metre gauge locos and not merely the *Red Norte*. (ITN says **3225** and **3227** were classified as *tipo* P when transferred to *Red Sur* in 1945 despite being 2-6-0s. By 1956 they had been reclassified as *tipo* Q.) Five in *Red Sur* fleet in 1957 [*EFE memoria anual*], and five in 1960.



Grupo 19, later tipo Q

2-6-0 d/w 1080mm 42½", cyls. 410mmx560mm, built by Henschel in 1912

Batch ordered for Howard Syndicate construction work on Longitudinal railway [11]. All of these locos were working on the Línea Central between Pama and Coquimbo in 1919 [5], and all on the *Red Norte* in 1920 [51]. Henschel 10702-5 2-6-0s were also delivered to ‘*Chilian Longitudinal Bahn*’ as same time as locos below. Those went to *FC del Norte de Chile*, as did Henschels 10969-80. See below. This batch had a running board step only at the front.

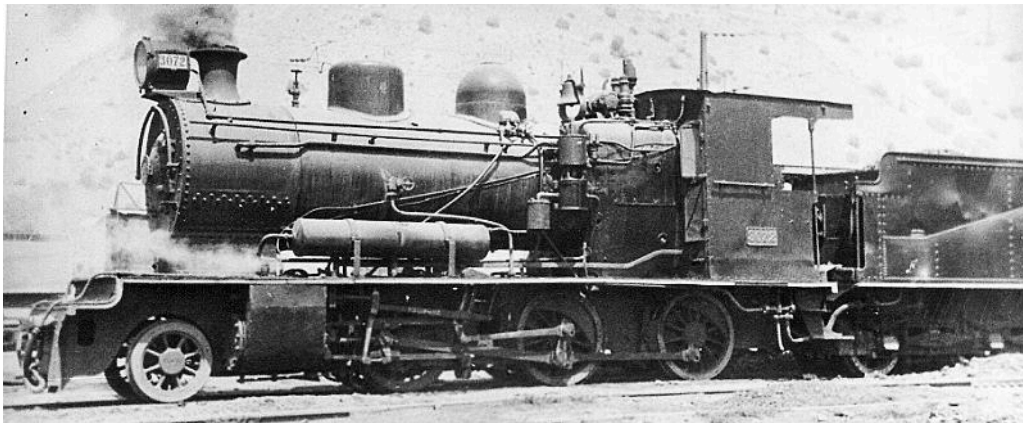
71	71	3071	w/n 10706	Under Coquimbo supervision 1951.
72	72	3072	w/n 10707	Under Coquimbo supervision 1951.
73	73	3073	w/n 10708	Under Coquimbo supervision 1951. Under <i>Zona II</i> (MSE) in 1955. One in <i>Red Sur</i> fleet in 1957 [<i>EFE memoria anual</i>]. Photographed on Talca-Constitución line sometime in 1950s or 1960s.
74	74	3074	w/n 10709	Under Coquimbo supervision 1951. Under <i>Zona II</i> (MSE) 1955.
75	75	3075	w/n 10710	Under Coquimbo supervision 1951. Under <i>Zona II</i> (MSE) 1955.
76	76	3076	w/n 11080	Under Coquimbo supervision 1951. Under <i>Zona II</i> (MSE) 1955. Photographed at Los Lagos in 1974 by Tommy Farr. At that time was carrying a strange dustbin-like sand-dome.
77	77	3077	w/n 11081	Under Coquimbo supervision 1951.
78	78	3078	w/n 11082	Under Coquimbo supervision 1951. Under <i>Zona II</i> (MSE) 1955.
79	79	3079	w/n 11083	Under Coquimbo supervision 1951. Under <i>Zona II</i> (MSE)

1955.

Had *tipo F* tender in 1942 [26] and 1952. This needs investigation as *tipo F* locos did not have tenders so reference to '*ténder F*' may mean something different. Under Coquimbo supervision 1952. Under *Zona III* (MC) in 1955, which probably means it was on the Los Lagos to Riñihue line at that point.

10 in stock at 1-1-1921, nos. **3071-80**, and 10 in stock in 1930 [US report] and in *RN* fleet in 1942 [11] [26], also all 10 in full 1942 list [27], and some of these went to *Red Sur* in 1950s. 5 of *tipo Q* in use on *Red Sur* in 1968 [3].

Turner & Ellis say that the above locos entered *FCAB* stock whilst that railway was running the *FCNC*, but that may have been an operational convenience rather than a legal one. All 10 in *RN* lists from 1951 and 1952, though in the latter **3080** had a 'tender F'. All ten listed in itinerario fleet list for 1952, with no. **3080** specifically mentioned as having a *tipo F* tender. All ten of these locos listed in [19] in mid 1950s. Nine in *Red Sur* fleet in 1957 [*EFE memoria anual*], and nine in 1960.



Tipo Q no. **3072**.



Pic by Tommy Farr, 1974 at Los Lagos, via the Restoration & Archiving Trust.

Grupo 20, later tipo R

2-8-0 d/w 991mm 39", cyls 406x457mm 16"x18", built by Rogers in two batches: 1897 ordered via W. R. Grace & Co., and 1900

The first batch were delivered via W. R. Grace & Co., with traditional cab roof & rounded tops to cab windows, a narrow running board with air tank above it on right hand side, eight spoke pony truck wheels. Flattish curve to top of dome.

The 2nd batch were delivered to 'State Railway of Chile', with rounded edges to cab roof and flat tops to cabside windows, full width running boards and all air tanks below. Nine spoke pony truck wheels.

Under the 1902 numbering scheme, see above, eight of them became **298-300**, and **303-7**, suggesting that one from

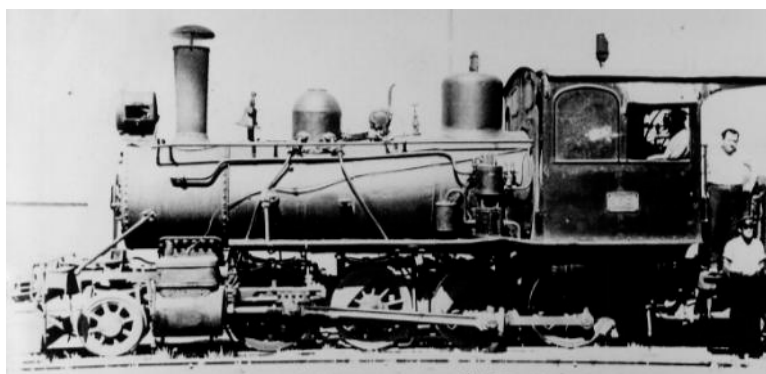
each of the two batches was missing, probably borrowed by the *DOP*.

Whilst there is no firm evidence to confirm that later renumberings retained the order of the locos, the fact that the engine eventually numbered **3084** seems to have been missing from the fleet for an extended period does suggest that this might indeed have been the original **22 ‘CAVILOLÉN’** which worked for the *DOP* for some years. Any photographic evidence that the first batch locos all ended up in the number range **3081-4** would help to support the theory.

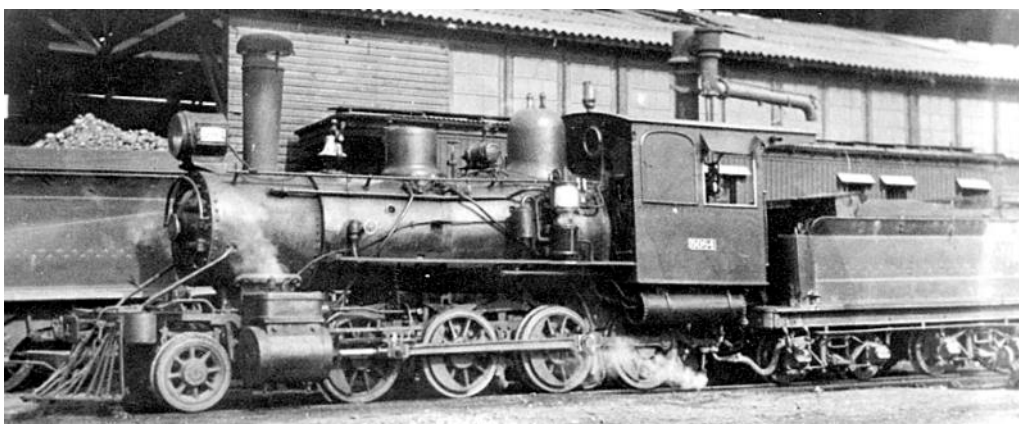
19 298	1	?	81	81	3081	w/n 5190	Under Coquimbo supervision 1951. At Los Lagos in late 1960s. It lay at San Bernardo in 1974 [11]. Probably scrapped at San Eugenio? Pic shows scrapping there in 1965 but that conflicts with previous statement.
20 299	2	?	82	82	3082	w/n 5191	Under Coquimbo supervision 1951.
21 300	3	?	83	83	3083	w/n 5192	Under Coquimbo supervision 1951.
22	4	?	84	84	3084	w/n 5193	In use by <i>DOP</i> for some years, including 1914 [1], and on Choapa to Salamanca line works in 1930 [1]. Under San Eugenio supervision 1951 & under Concepción 1955. A photo shows this loco with a raised running board rather than the usual one at the very foot of the cabsides. A flat-topped sand-dome was also visible in the image.
33 303?	5	?	85	85	3085	w/n 5647	On Los Vilos line in 1912 [11]. Under Coquimbo supervision 1951.
34 304?	6	?	86	86	3086	w/n 5648	Under Coquimbo supervision 1951.
35 305?	7	?	87	87	3087	w/n 5649	<i>EFE memoria</i> for 1920 p377 states that a loco 3087 belonged to the <i>DOP</i> at that time. Under Coquimbo supervision 1951. Preserved at Parque Quinta Normal in Santiago.
36 306?	22	?	88	88	3088	w/n 5650	Under Concepción supervision 1951 & 1955 ie. working in south.
37 307?	23	?	89	89	3089	w/n 5651	Under Coquimbo supervision 1951.
38	33	?	?	90	3090	w/n 5652	Under Coquimbo supervision 1951.

The post-1908 *EFE* diagram book lists seven of these, nos. **298-300**, and **303-307**, calling them ‘*tipo consolidada Calera*’. All on *Línea Central* Calera to Palquico section in 1919 [5]. All on *Red Norte* in 1920 [51]. **1-7** on Calera to Cabildo around 1913, whilst others were on Los Vilos railway [11]. 10 in stock at 1-1-1921, nos. **3081-90**, and 10 in stock in 1930 [US report] and in *RN* fleet in 1942 [11] [26]. The 1920 *EFE Boletín* volume contains a short report saying that all 10 of these locos were in use on the La Calera to Palquico section, and seeking permission to buy two new boilers for them. This was granted. All ten listed in full metre gauge lists in 1942 [27] and mid 1950s [19]. Eight in *RN* list from 1951, ie. minus **3084** and **3088**. 1952 *RN* list implies that the two missing (ie. in the south were by then **3085** and **3088**, all others being present at that time. Two in *Red Sur* fleet in 1957 [*EFE memoria anual*], and two in 1960. 4 of *tipo R* in use on *Red Sur* in 1968 [3].

Diagram R has the note “former **298-300** and **303-307**” [11]. Names may still have been carried in 1915, judging by a photo seen from that date.



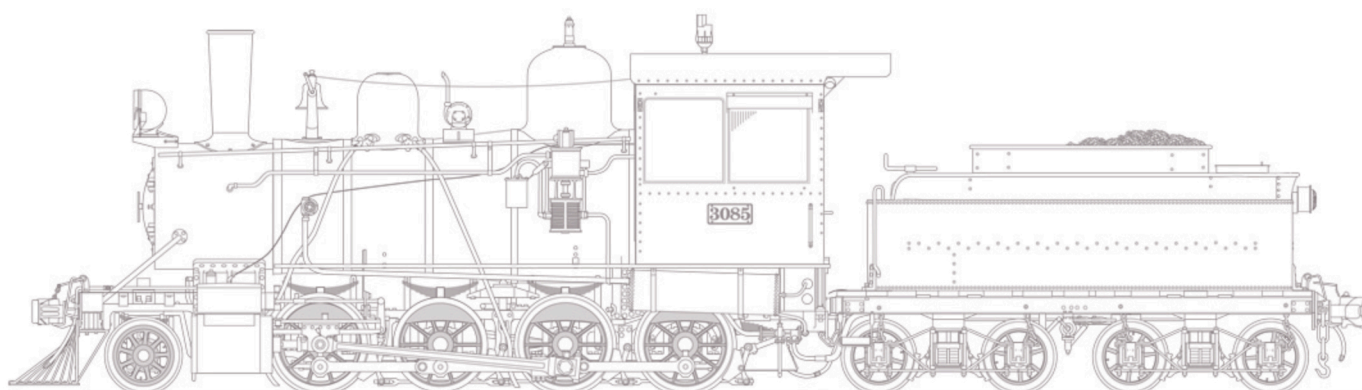
No. **3081** from the first batch.



Tipo R no. 3084.



MCC's own photo of **3087** from the second batch, taken at the Quinta Normal museum.



This modern drawing was created from careful measurement of no. **3087** at the Quinta Normal museum. It therefore shows a second batch *tipo R* loco in its final operating condition.

Grupo 21, later tipo I?

2-6-0 d/w 48"?, cyls. 15"x22", built by Lima in 1907

See also nos. **3040-41** above.

15 95 31 91 3091 w/n

100 92 3092? w/n

Working on the Los Pozos branch from Chañaral in 1919.

On loan to the *DOP* at some point, including in 1919. Not on *Red Norte* in 1920 [51].

[11] suggests that Lima 2-6-0 no. **100** was working on the Los Vilos section in 1912, whereas *DOP* annual *memorias* say that it was working on Choapa to Salamanca construction in both 1910 and 1912 but had gone back to the *EFE* by 1914. Working on the Los Pozos branch in 1919, though still annotated as '*de la DOP*'. In 1920 3092 was shown as a *tipo*

S [51], see below. See above at **3040**, which was probably the same loco given an out-of-sequence number.

1930 US report implies no such locos with these numbers, though one is shown at **3040**'s place in the numbering sequence. No sign of either in full *EFE* 1942 list [27].

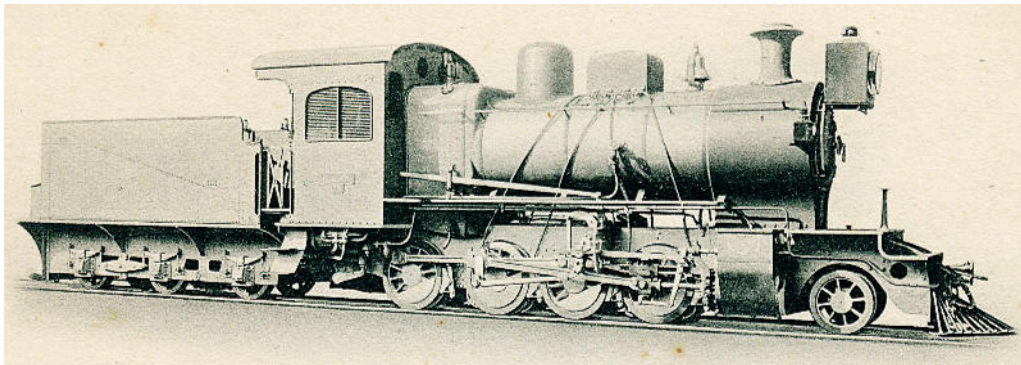
Grupo ?, later tipo S

2-8-0 d/w 1015mm 40", cyls. 445x560mm, built by Hanomag in 1913

See *Grupo* 9 several pages back for an comment on the mystery surrounding the identity of the only Hanomag 2-8-0 supplied in 1913. It was probably almost identical to the Jung 2-8-0s listed below, so adding it to *tipo* S would have made sense.

75 92 3092 w/n 6944

On *Red Norte* in 1920 [51]. [5] [11] says this loco involved in trials between Coquimbo and Ovalle in 1922 before the *tipo* Ws arrived. Had '*ténder F*' in 1942 [26]. Under Coquimbo supervision 1952. Listed in itinerario fleet list in 1952, as having *tipo F* tender (?). Listed in [19] in mid 1950s. Withdrawn 1957 [38].



Hanomag publicity photo.

Grupo 22, later tipo S

2-8-0 d/w 1015mm?, cyls. 445x560mm?, built by Jung in 1913 (3093-5) and 1914 (3096-7)

NBL records suggest that they too may have tendered for this contract, or for a slightly later equivalent. All were working on the Línea Central between Vallenar and Pueblo Hundido in 1919 [5]. All on *Red Norte* in 1920 [51]. At least one *tipo* S was at Coquimbo during the *maremoto* in 1922 when it was overturned by the force of the water. All under Coquimbo supervision 1952. Note that these locos carried four different numbers in the space of only six years! The brass foundries must have been busy!

70 54 93 3093 w/n 1975

Had '*ténder F*' in 1942 [26]. Listed in itinerario fleet list in 1952, as having *tipo F* tender (?).

71 55 94 3094 w/n 1976

72 56 95 3095 w/n 1977

73 57 96 3096 w/n 1978

74 58 97 3097 w/n 1979

One of these locos (or the solitary similar Hanomag) was in Copiapó on Sunday 13th May 1917, when it was involved in a derailment [*Sucesos* issue 766]. 6 in stock at 1-1-1921, nos. **3092-97**, and 6 in stock in 1930 [US report] and in *RN* fleet in 1942 [11] [26], thus including the single Hanomag **3092** in the class. All six listed in 1942 [27], 1951, 1952 and in mid 1950s [19].



Tipo S no. 3093.

Grupo 23, later tipo T

2-6-0 d/w 1100mm?, cyls. 360x550mm?, built by Henschel (3098-3102) and O&K (3103-3109) in 1912

These Henschels were originally thought to have been from the batch ordered by Chilean Longitudinal Rly. (w/n 10702-10710), but were later found to have been from the *FCNC*'s batch (w/n 10969-10980). O&Ks also were ex *FCNC* [11]; there had been 12 in the batch (w/n 5201-5212) which were *FCNC* nos. **21-32**.

These locos were on hire from the *FCNC* from the end of 1915, at a rate of \$5 per day (along with a variety of rolling stock) and some or all were returned there in 1929, ie. soon after the *FCNC* was completed [MOBR1393], and apparently in poor condition. They did receive 3000 series numbers before they went back north, as proven by [51] and suggested by [11, p71] implies that they did. Discussion in 1920 [*EFE Boletín* 1920 pp496-7 and pp1310-12] speculated on whether, if these locos were purchased for the *Red Norte*, they would permit the cascading of various older engines to the *Red Sur* metre gauge branches. “*Así, por ejemplo, aunque las locomotoras tomadas en arrendamiento son mui inferiores en calidad a las 20 Mikado que se adquiriran, ellas son mui superiores al resto de las locomotoras de la Red Norte; i si la Empresa las comprase, se podria disponer para los ramales de la Red Sur de un grupo de locomotoras poco potentes que hoi dia son inapropiadas para las everas características de la linea de la Red Norte,*”

9	?	98	98	3098	w/n 10969	Working on the Línea Central between Vallenar and Pueblo Huido in 1919. Returned north in 1929. On <i>FCIPH</i> in 1961.
10	?	99	99	3099	w/n 10970	Working on the Línea Central between Vallenar and Pueblo Huido in 1919. Returned north in 1929.
14	?	100	100	3100	w/n 10974	Working on the Línea Central between Coquimbo and Vallenar in 1919. On <i>FCTC</i> in 1956 and 1968.
15	?	101	101	3101	w/n 10975	Working on the Línea Central between Vallenar and Pueblo Huido in 1919. On <i>FCTC</i> in 1956 and 1968.
16	?	102	102	3102	w/n 10976	Working on the Línea Central between Coquimbo and Vallenar in 1919. On <i>FCTC</i> in 1956 and 1968.
23	?	103	103	3103	w/n 5203	Working on the Línea Central between Vallenar and Pueblo Huido in 1919. [11] says this loco involved in trials between Coquimbo and Ovalle in 1922 before tipo Ws arrived.
25	?	104	104	3104	w/n 5205	Working on the Línea Central between Coquimbo and Vallenar in 1919. Returned north in 1929.
27	?	105	105	3105	w/n 5207	Working on the Línea Central between Coquimbo and Vallenar in 1919. Returned north in 1929.
29	?	106	106	3106	w/n 5209	Working on the Línea Central between Coquimbo and Vallenar in 1919. Returned north in 1929.

30	?	107	107	3107	w/n 5210	Working on the Línea Central between Vallenar and Pueblo Hundido in 1919.
31	?	108	108	3108	w/n 5211	Working on the Línea Central between Coquimbo and Vallenar in 1919. Returned north in 1929.
32	?	109	109	3109	w/n 5212	Working on the Línea Central between Coquimbo and Vallenar in 1919. Returned north in 1929. ‘Prestadas’ to <i>VyO en 1930-2</i> [3].

12 in stock at 1-1-1921, nos. **98-109**, but none in stock in 1930 [US report] or in *RN* fleet in 1942 [11] [26].

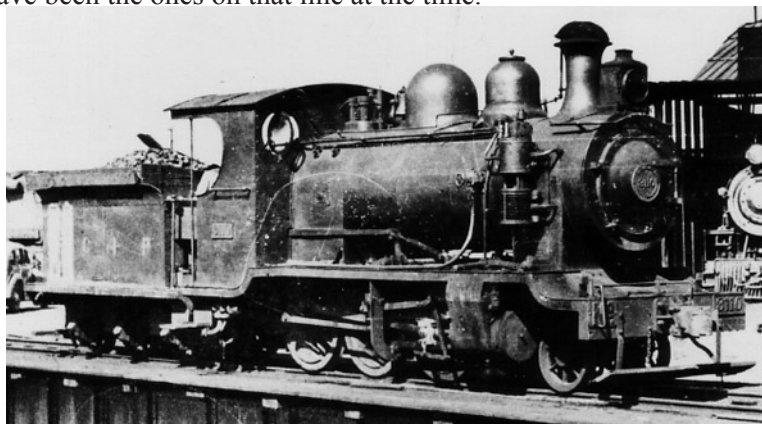
Red Sur tipo H

2-6-0 d/w 1100mm, cyls. 360x550mm, built by Borsig in 1906

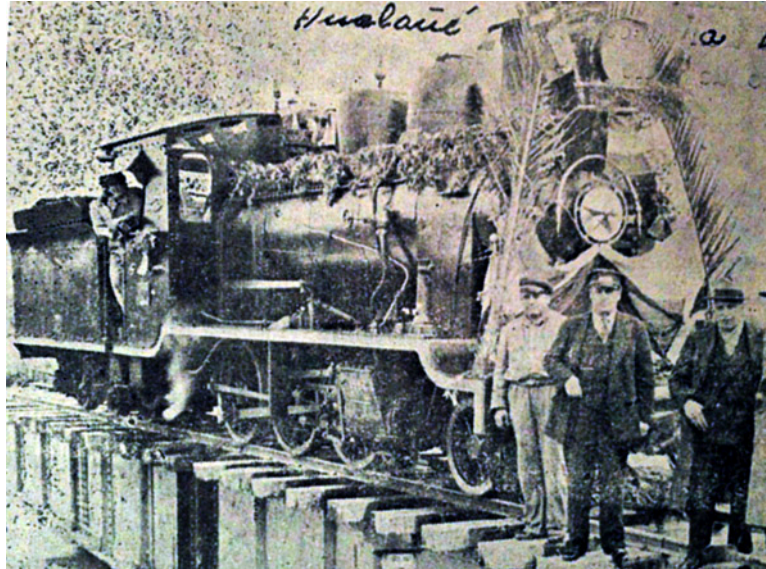
When *Red Sur* 4000 series locos were renumbered into the 3000s sometime during the 1920s or 30s, these engines received the re-used numbers **3101-9**. They could not have received those particular numbers until the *tipo T* locos mentioned previously had gone back north in 1929. This suggests that the phasing out of the 4000 series numbers may have only occurred after that year. Loco weight given as 28.2T in 1930 US report. There were twelve of these locos built. One of the missing three is listed immediately below as no. **3110**, but where did the other two go?

These locos were probably from three batches, with the following Borsig works numbers and 1902 running numbers: 5557-8 & 5566-7 nos. 338-341 , 5793-4, 5838 & 5857 nos. 383-386 , 5952-5955 nos. 422-425 .	7	4007	3101	w/n ?	Listed under <i>RS Zona II</i> (MSE) in 1939, 1941, 1951 & 1955.
	8	4008	3102	w/n ?	Listed under <i>RS Zona II</i> (MSE) in 1939, 1941, 1951 & 1955.
	33	4033	3103	w/n ?	Listed under <i>RS Zona II</i> (MSE) in 1939, 1941, 1951 & 1955.
	34	4034	3104	w/n ?	Listed under <i>RS Zona II</i> (MSE) in 1939, 1941 & 1951.
	36	4036	3105	w/n ?	Listed under <i>RS Zona II</i> (MSE) in 1939, 1941, 1951 & 1955.
	38	4038	3106	w/n ?	Listed under <i>RS Zona II</i> (MSE) in 1939, 1941, 1951 & 1955.
	56	4056	3107	w/n ?	Listed under <i>RS Zona II</i> (MSE) in 1939, 1941, 1951 & 1955.
	58	4058	3108	w/n ?	Listed under <i>RS Zona II</i> (MSE) in 1939, 1941, 1951 & 1955. Withdrawn 1957 [38].
	61	4061	3109	w/n ?	On loan in 1930 [2]. Listed under <i>RS Zona II</i> (MSE) in 1939, 1941 & 1951.

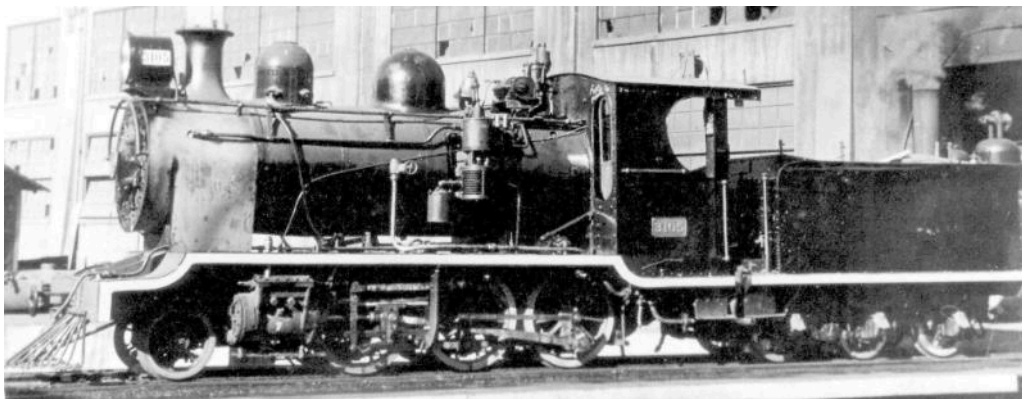
3101-3109 in full *EFE* list for 1942 [27]. Also all in 1951 as under *Zona II* (MSE). All still listed in [19] in mid 1950s. Five in *Red Sur* fleet in 1957 [*EFE memoria anual*], and five in 1960. A 1952 *Red Sur* table of loads permissible for locos on each line gives figures for *tipo H*, *tipo D*, and *tipo G*, on the Monte Aguila to Antuco branch, implying that those locos may have been the ones on that line at the time.



Note the air pump as built, on the right side of the smokebox.
 Photo was taken at El Colorado works in Iquique.



One of these locos worked the opening day train from Hualañé to Licantén in 1938. Note that the air pump has disappeared from the right side of the smokebox, probably relocated to the left side of the firebox.



Red Sur Tipo H no. 3105., seen in later life when the air pump had indeed been moved to the left side just ahead of the firebox.

One of the missing three from the above class

3110 was Borsig 2-6-0 N° 340 ex FCIP, according to PMF. See note at foot of Red Sur tipo T section, below.

Red Sur tipo T

2-6-0 d/w 1100mm, cyls. 360x550mm, built by Borsig in 1907-8?

NB The works numbers and original numbers **452-456** may not correspond accurately to the later running numbers. Running board step only at rear. Loco weight given as 30.3T in 1930 US report.

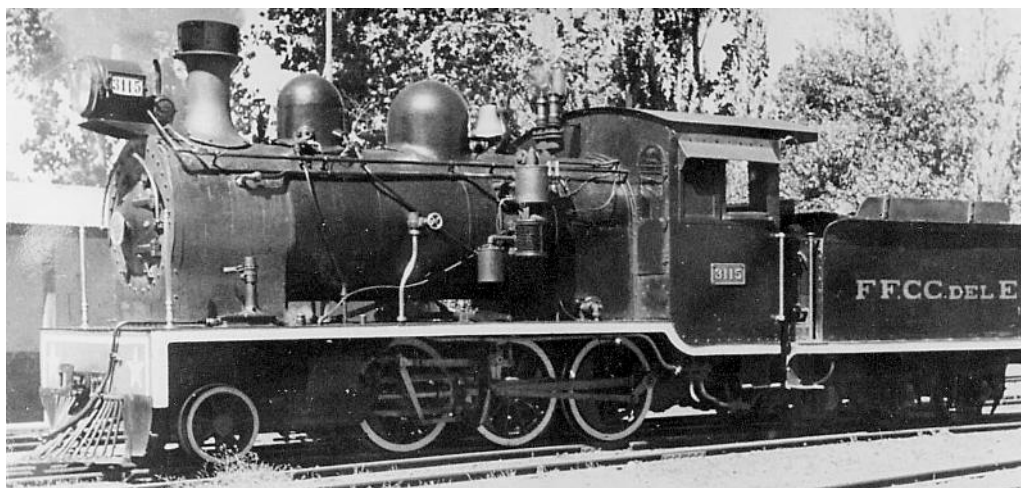
452	9	4009	3111	w/n 6663	Listed under RS Zona I (MByC) in 1939 & 1941, and specifically (MB) in 1951. Under RS Zona II (MSE) in 1955.
453	18	4018	3112	w/n 6664	Listed under RS Zona I (MByC) in 1939 & 1941, and specifically (MB) in 1951 & 1955.
454	35	4035	3113	w/n 6665	Listed under RS Zona II (MSE) in 1939 [4], 1941, and in 1951 & 1955. Reincorporated into active fleet 1957 [38],
455	37	4037	3114	w/n 6666	Listed under RS Zona II (MSE) in 1939 [4],

456 54 4054 3115 w/n 6667

1941, and in 1951 & 1955. Reincorporated into active fleet 1957 [38],

Listed under *RS Zona I* (MByC) in 1939 & 1941, and specifically (MB) in 1951. Listed under *RS Zona II* (MSE) in 1955. On San Felipe – Putaendo branch certainly in 1952 which is not surprising as that was probably the only metre gauge line in *Zona I*.

3111-3115 in full *EFE* list of 1942 [27]. Nos. **3110-3115** listed as *tipo T* in full metre gauge list of mid 1950s. Where did **3110** come from? The photos above and below clearly show that **3110** (above) and **3115** (below) were not identical. A 1952 *Red Sur* table of loads permissible for locos on each line gives only a figure for *Tipo T* on the San Felipe to Putaendo branch, implying that those locos may have been the only ones on that line at the time. There is also a photo showing one of these engines on the Curicó to Licanten branch.



Tipo T no. **3115**. Note again that the air pump has been moved to the left side, possibly to improve sightlines for the drivers.



Tipo C

Ex FC de Monte Aguila / FC Trasandino por Antuco, acquired by EFE in 1943

No details are known for *FC de Monte Aguila* loco 3. It may have been similar to the other two but has not been found in the BLW list. A photo suggests that it may alternatively have been a French-looking loco with dome just behind chimney. See section 3.1.8.

Ex *FCMA/FCTA* no. 3

3116 w/n ?

Listed under *RS Zona III* (MC) in 1951 & 1955, ie. still working in the south. Listed in [19] in mid 1950s.

0-6-2T d/w 44", cyls. 12"x18", built by Baldwin in 1905

Ex *FC de Monte Aguila / FC Trasandino por Antuco*, acquired by *EFE* in 1943.

Ex **2 ‘JOSÉ IGNACIO VERGARA’ 3117** w/n 26016 Ex *FCMA*. Listed under *RS Zona III* (MC) in 1951, ie still working in the south. However working timetable list for 1951 does not show this loco.

Ex **1 ‘JOSÉ MANUEL BALMACEDA’ 3121** w/n 25997 Ex *FCMA*. Listed under *RS Zona III* (MC) in 1951, ie still working in the south. However, a loco of this number was sold to the Braden Copper Co. in 1931 probably for scrap [3], ie. there must have been a previous bearer of this number.

0-4-0TT d/w ?, cyls. ?, built by Hanomag in ?

Ex *FC Trasandino por San Martín* purchased by *EFE* in 1943. Jens Schindler suggests one of these ex-*FCTpSM* locos was Hanomag 4673 of 1906.

Ex **‘SAN MARTÍN’ 3118** w/n ? Listed under *RS Zona III* (MC) in 1951 & 1955, ie still in the south. Listed in [19] in mid 1950s.

0-6-0T d/w ?, cyls. ?, built by Borsig?? in ?

Possibly Borsig 6777 (or on *FCALP*?) and 8235. Ex *FC Trasandino por San Martín* purchased by *EFE* in 1943.

Ex **‘COLLILELFU’ 3119** w/n ? Listed under *RS Zona III* (MC) in 1951, ie still in the south. Listed in [19] in mid 1950s.

Ex **‘GRACIELA’ 3120** w/n ? Listed under *RS Zona III* (MC) in 1951, ie still in the south. Not listed in [19] in mid 1950s.

Tipo D

Details unknown

3121 Loco with this no. sold to Braden Copper Co. in 1929 presumably for scrap [2]. Listed under *RS Zona III* (MC) in 1951. Listed in [19] in mid 1950s.

3122 Listed under *RS Zona III* (MC) in 1951 ie. working in south. But a **3122** was sold to Braden Copper Co. in 1931 presumably for scrap [3]. ie. were there two bearers of this number? No sign in full *EFE* list for 1942 [27]. Listed in [19] in mid 1950s.

A 1952 *Red Sur* table of loads permissible for locos on each line gives figures for *tipo H*, *tipo D*, and *tipo G*, on the Monte Aguila branch, implying that those locos may have been the ones on that line at the time.

Details unknown

3123 *Excluidas* 1929 [3].

3124 *Excluidas* 1929 [3].

3126 transferred from *Red Norte* to *Red Sur* in 1931 [3].

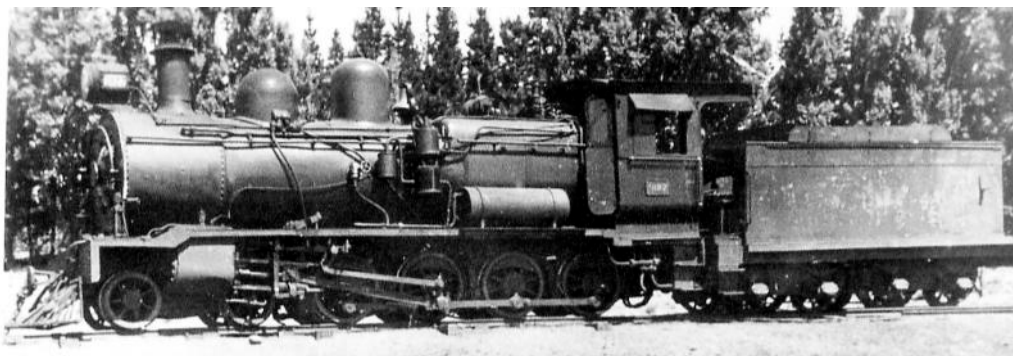
Tipo L (FCALP classification)

4-8-0 d/w 1028mm 40½", cyls, 432x533mm 17"x21", built by Hawthorn Leslie in 1910

3127 w/n ? Listed under *RS Zona III* (MC) in 1951 & 1955 ie. working in south. This must be doubtful. Listed in [19] in mid 1950s. Reincorporated into active fleet 1957 [38],

3128 Unknown but withdrawn from *FCALP* in 1948.

3129 Unknown but withdrawn from *FCALP* in 1948.



Tipo L ex FCALP no. **3127**. Also with the air pump to the left.

***Tipo A-B (according to [19].) or possibly A
0-6-0T d/w ?, cyls. 262x557mm, built by Borsig in ?***

Supposedly ex FCALP.

3130 w/n ?	At Arica on FCALP in 1955. [16] says this is the loco now plinthed in Arica. Confirmed in service as sole surviving member of <i>tipo A-B</i> by [19].
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3131 w/n ?	Unknown.
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***Tipo A-B (according to [19].) or possibly C
0-6-0T d/w 926mm 36½", cyls. 320x515mm 12½"x20¼", built by Hawthorn Leslie in 1911***

Ex FCALP.

3132 w/n 2874	At Arica on FCALP in 1955. Listed in [19] in mid 1950s as tipo C. Withdrawn from FCALP in 1957 [38].
3133 w/n 2875	At Arica on FCALP in 1955. Listed in [19] in mid 1950s as tipo C. Withdrawn from FCALP in 1957 [38] or 1960 [50]].

No sign of any in 1942 full EFE list [27].

***Tipo C? or tipo I (FCALP classification)
0-6-0T d/w 810mm 31", cyls. 280x410mm 11"x16"?, built by ALCo-Cooke prior to 1926***

Built for Russia but not delivered, then bought for the FCALP, their nos. **5-6**.

3140 w/n 58954	ex FCALP 5. Listed as tipo I in [19] in mid 1950s. Withdrawn 1956 [50].
3141 w/n 58955	ex FCALP 6. Listed as tipo I in [19] in mid 1950s. Withdrawn 1956 [50].

No sign of any in 1942 full EFE list [27].

2-2-0T d/w 28", cyls. 4.5"x12", built by Rogers in 1869

Ex Copiapó railway standard gauge inspection car.

3200 w/n 1666	25 'TOMÁS G. GALLO' Supposedly carried five different numbers, 25 , then ?, then ?, then <i>Red Central Norte 9A</i> (from 1916?), and finally EFE 3200 . <i>Excluidas</i> 1929 [3]. Sold to Braden Copper Co. 1931, for scrap? [3]. Photos suggest it received slightly larger tanks in later life.
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Source [19] from mid 1950s lists locos **3201-3204**, **3210-3212**, and **3220-3228** as *tipo Q*. See below for the last batch.

2-6-0 d/w ?, cyls. ?, built by Borsig or Hanomag in ? [Copeland]

Possibly ex *FCALP* but that railway's only 2-6-0s were by Henschel.

3210 w/n ?

At Arica on *FCALP* in 1955. [50] supports presence on *FCALP* at some stage and that it may have been by Henschel

No sign in 1942 full *EFE* list [27].

Later tipo Q

2-6-0 d/w 1105mm 43½", cyls. 450x600mm, built by Henschel in 1912?

All from FC Iquique-Pintados? Large running board step at front and small at rear.

3220 w/n

ex-? On *FC Iquique a Pueblo Hundido* in 1971. At Iquique in 1978 [16] and reported as being Henschel 10980.

3221 w/n

On *FCIPH* in 1961.

3222 w/n

3223 w/n

On *FC Iquique a Pueblo Hundido* in 1971. At Baquedano in 1978. Survives as national monument at Baquedano. [16] says this was by O&K, their 5212.

3224 w/n

3225 w/n

Listed under *RS Zona III (MC)* in 1951 & 1955 ie. working in south. Classified as *tipo P* by *Red Sur* but by 1951 had been re-classified as *tipo Q*, though *RS* working timetable list for 1951 had not realised this.

3227 w/n ?

Listed under *RS Zona III (MC)* in 1951 & 1955 ie. working in south. Classified as *tipo P* by *Red Sur* but by 1951 had been re-classified as *tipo Q*, though *RS* working timetable list for 1951 had not realised this. Photographed at Los Lagos in 1974 by Tommy Farr.

3225 & 3227 transferred from *FCIP* to *Red Sur* in 1945 and then classified as *tipo P* along with **3065** to **3070**, which were 2-8-0s. But by 1956, they had been reclassified as *tipo Q*, along with **3071-80**, which were 2-6-0s [6]. Strangely, none of these appear in full *EFE* 1942 list [27]. All of **3220-3228** listed in [19] in mid 1950s as *tipo Q*.



3223 as surviving at Baquedano. The loco has gained a bogie tender in place of its original six-wheeled one, and this has had its sides raised either before or when the oil tank was dropped into the bunker.



Pic by Tommy Farr 1974 at Los Lagos, via Restoration & Archiving Trust.



One of these engines on its side after the 1922 tsunami.

Tipo N (FCALP classification)

2-6-0 d/w 1105mm 43½", cyls. 450x600mm, built by Henschel in 1913

Ex FCALP nos. 31, 32, 34, and others.

3231 w/n 11714

3232 w/n 11715

3233 w/n 11717

3235 w/n ?

This one listed in [19] in mid 1950s. [50] supports presence on FCALP at some time.

Also in [19] as tipo N, and in [50] as on FCALP.

3236 w/n ?	[50] supports presence on <i>FCALP</i> at some stage.
3237 w/n ?	[50] supports presence on <i>FCALP</i> at some stage.
3238 w/n ?	[50] supports presence on <i>FCALP</i> at some stage.

No sign of any in 1942 full *EFE* list [27].

Rack and adhesion locos of tipos U, V, X, Y and Z

These specialised machines, with running numbers in the 33xx and 34xx range, are considered in the following section 3.2.5.

Tipo W

2-8-2 d/w 1105mm 43½", cyls. 495x560mm 19½"x22", built by Baldwin between 1921 and 1940

Batches were delivered in 1921 (**3501-3524**). 1923 (**3525-3535**), 1929 (**3536-3540**), 1934 (**3541-3550**), 1940 (**3551-3556**). BLW specs in vol 66 p415+ and p418+. From second batch onward both inner drivers were flangeless, grate bars were closer together, piston tail rods were fitted (against Baldwin's recommendation), and a Worthington feed-water heater was fitted. Tenders sizes varied. The 1934 and 1940 locos had larger diameter sand-domes than the earlier engines. The 1940 batch were designated BLW new class 2-8-2 19½S nos. 1-6.

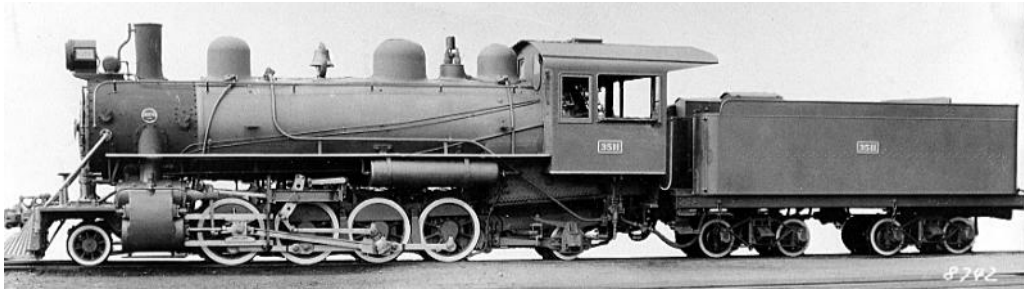
3501 w/n 55089	On <i>FCIPH</i> in 1971. At Baquedano in 1978 carrying MSB plate [16]. Survives as national monument at Baquedano.
3502 w/n 55090	On <i>FCIPH</i> in 1971. At Iquique in 1978 carrying MSB plate [16].
3503 w/n 55091	On <i>FCIPH</i> in 1971. At Iquique in 1978.
3504 w/n 55092	On <i>FCIPH</i> in 1971. At Iquique in 1978 carrying Maestranza Ovalle plate.
3505 w/n 55093	
3506 w/n 55094	
3507 w/n 55095	In steam at Iquique in 1970 [J. Wiseman pic]. On <i>FCIPH</i> in 1971. At Iquique in 1978 carrying MSB plate [16].
3508 w/n 55096	Under Coquimbo supervision 1951 like the others but loaned/leased to <i>FCTC</i> . At Iquique in 1978 [16].
3509 w/n 55097	At Iquique in 1978 carrying MSB plate [16].
3510 w/n 55098	
3511 w/n 56379	At Baquedano in 1978 [16]. Was on <i>FCTC</i> in 1954 and hauled President Juan Perón of Argentina from Río Blanco to Los Andes. Survives as national monument at Baquedano.
3512 w/n 56381	Under Coquimbo supervision 1951 like the others but leased to <i>FCALP</i> . [50] supports presence on <i>FCALP</i> . On <i>FCIPH</i> in 1971.
3513 w/n 56382	At Iquique in 1978 [16].
3514 w/n 56383	
3515 w/n 56384	On <i>FCIPH</i> in 1971. At Iquique in 1978 [16].
3516 w/n 56385	
3517 w/n 56386	
3518 w/n 56425	Under Coquimbo supervision 1951 like the others but leased to <i>FCALP</i> . [50] supports presence on <i>FCALP</i> . On <i>FCIPH</i> in 1971. At Baquedano in 1978 [16]. Survives as national monument at Baquedano.
3519 w/n 56426	[50] supports presence on <i>FCALP</i> at some stage. On <i>FCIPH</i> in 1971. At Iquique in 1978 [16].

3520	w/n 56427	
3521	w/n 56428	On <i>FCIPH</i> in 1971. At Iquique in 1978 [16]. Moved to Baquedano for spares and later scrapped [16].
3522	w/n 56429	On <i>FCIPH</i> in 1961 and 1971. At Iquique in 1978 [16].
3523	w/n 56430	Scrapped pre 1978 [16].
3524	w/n 56431	At Iquique in 1978 [16].
3525	w/n 56454	On <i>FCIPH</i> in 1971. At Baquedano in 1978 carrying MSB plate [16]. Survives as national monument at Baquedano.
3526	w/n 56455	On <i>FCIPH</i> in 1971. At Iquique in 1978 carrying MSB plate [16].
3527	w/n 56456	On <i>FCIPH</i> in 1971.
3528	w/n 56457	
3529	w/n 56458	Under Coquimbo supervision 1951 like the others but leased to <i>FCALP</i> .
3530	w/n 56459	At Iquique in 1978 carrying MSB plate [16].
3531	w/n 56460	Booster fitted [11] [26]. Not listed in 1952 itinerario fleet list for some reason. At Iquique in 1978 [16].
3532	w/n 56461	
3533	w/n 56462	Under Coquimbo supervision 1951 like the others but leased to <i>FCALP</i> . On <i>FCIPH</i> in 1961.
3534	w/n 56463	
3535	w/n 56464	
3536	w/n 61118	Booster fitted [11] [26]. Not listed in 1952 itinerario fleet list for some reason.
3537	w/n 61119	On <i>FCIPH</i> in 1971. At Iquique in 1978 [16].
3538	w/n 61120	Scrapped pre 1978 [16].
3539	w/n 61121	Booster fitted [11] [26].
3540	w/n 61122	On <i>FCIPH</i> in 1971. At Iquique in 1978 [16].
3541	w/n 61798	Scrapped pre 1978 [16].
3542	w/n 61799	
3543	w/n 61800	
3544	w/n 61801	At Ovalle in 1978 [16] apparently abandoned midway through overhaul.
3545	w/n 61802	In 1973 was probably last metre gauge loco from north repaired at MSB [49]. At Iquique in 1978 carrying MSB plate [16].
3546	w/n 61803	On <i>FCIPH</i> in 1971. Scrapped pre 1978 [16].
3547	w/n 61804	Under Coquimbo supervision 1951 like the others but leased to <i>FC Iquique a Pintados</i> . On <i>FCIPH</i> in 1971. At Iquique in 1978 [16].
3548	w/n 61805	Seen in steam at Iquique in 1963 [25]. At Iquique in 1978 [16].
3549	w/n 61806	At Iquique in 1978 [16].
3550	w/n 61807	At Iquique in 1978 [16].

3551	w/n 62427	Scrapped pre 1978 [16].
3552	w/n 62428	
3553	w/n 62429	On <i>FCIPH</i> in 1971. At Iquique in 1978 [16].
3554	w/n 62430	On <i>FCIPH</i> in 1971. At Iquique in 1978 [16].
3555	w/n 62431	On <i>FCIPH</i> in 1971, and seen in steam at Baquedano in 1972 [Ron Ziel]. At Iquique in 1978 [16].

3556 w/n 62432

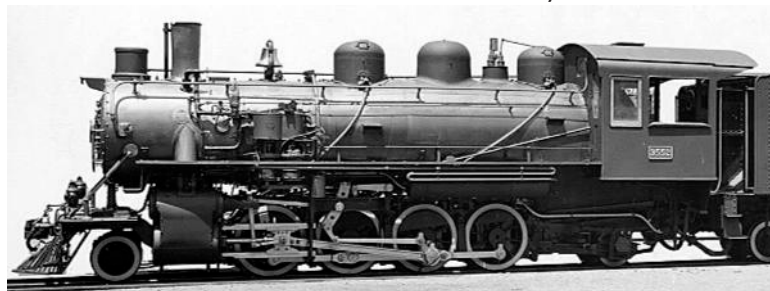
35 given as total in 1930 [US report]. *RN* fleet in 1942 [26] had 50 of them. Full EFE list of 1942 [27] contains **3501-3557** (!). *RN* list from 1951 includes all from **3501-3563**.



No. **3511** with an original tender, and with no obvious brake pump though that may have been mounted on the driver's side.



No. **3511** seen rather later, now with Vanderbilt tender, air pump just behind the cylinders, the second sand dome moved forward, and the turbo shifted back from before the chimney to in front of the cab.



No. **3552** with a compound air pump in place of the usual 9" single pump. The drum in front of the chimney may be part of a feed water heater.



No. **3536**, with a B, B-2, BL, or BL-2 Worthington feed water heater mounted on the fireman's side, and probably with the air pump relocated to the driver's side.



Tipo Ws on their way from Vaparaíso to La Calera on broad gauge bogie flats.



And one on a rather more specialised broad gauge transporter wagon.



Tipo W no.3557 at Iquique at an unknown date, seemingly still bearing its name-plate. Note the slightly larger tender than in the first picture above, and that the rear sand dome has been moved forward and is now just behind the front sand dome, as also in the second image of no. 3511 above..

***Tipo W* tender types**

Tipo W Tenders may have moved around: 1952 RN list gives **3501-30, 3532-35, 3537** all with 17 cu. m. of water and 7 tonnes of coal, weight of tender 40T. **3538, 3540-56** with 18.95cu.m. of water and 7 tonnes of coal with weight 45.45T, whilst **3531, 3536**, and **3539** have 24cu.m. of water and 7 tonnes of coal with weight 45.45T, **3557-3561** have 18.95 cu.m. of water and 8 tonnes of coal with weight 45.45T. **3562-63** quantities not given but weight 51.8T.

Tipo W

2-8-2 d/w 1105mm 43½", cyls. 495mmx560mm 19½"x22", assembled by EFE at MSB in 1945

Names from source [11]. Jens Schindler says that the first tipo Ws were supplied by San Bernardo in 1942. An *EFE memoria* from 1944 confirms that this batch were ordered by Decreto 6/550 of 1943 and that they were to arrive in Chile during December 1944.

3557 'PRESIDENTE RÍOS' On *FCIPH* in 1971. At Iquique in 1978[16]. Photo showing new loco confirms that nameplates did not include the President's Christian names, as had been implied in [11]. *En Viaje* issue 111 of Feb 1943 implies that the name was 'Juan Antonio Ríos' but the photo below shows an actual plate and proves that it bore the short name 'Presidente Ríos'. Names were originally on cabsides and numberplates on bunkers. The following locos may therefore also have had shorter versions of their names.

3558 'PRESIDENTE PEDRO AGUIRRE CERDA' On *FCIPH* in 1971. At Iquique in 1978 carrying MSB plate [16].

3559 'PRESIDENTE GABRIEL GONZALÉZ VIDELA' or this name may have been on **3560**, or **3562** [16]. At Iquique in 1978 [16].

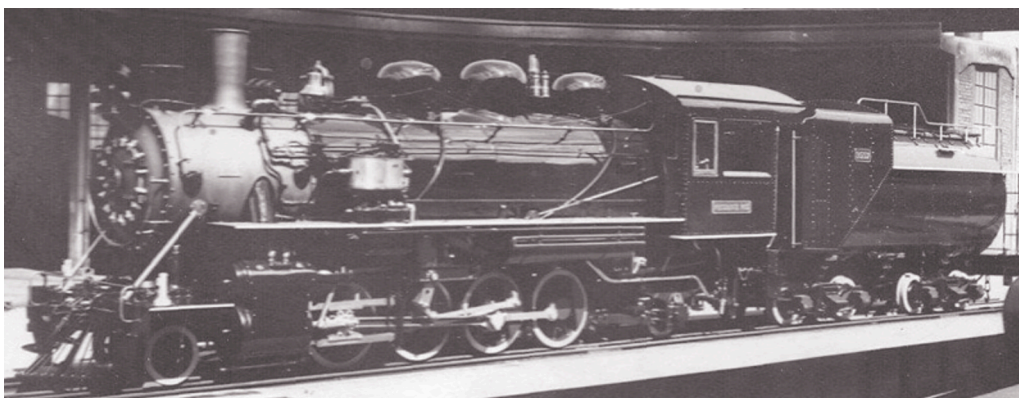
3560

3561 On *FCIPH* in 1971. At Iquique in 1978 [16].

3562 On *FCIPH* in 1971. At Iquique in steam in 1978 carrying MSB plate [16].

3563 Scrapped pre 1978 [16].

Whole class of 63 under Coquimbo supervision 1951. Probably also all 63 under *RN* in 1952, certainly all those numbers are in *RN* list. Five in *Red Sur* fleet in 1957 [*EFE memoria anual*] 4 from 1923 locos and one from 1926, and same numbers in 1960. 3 of tipo W in use on *Red Sur* in 1968, 1 from 1923 locos and 2 from 1934 batch [3].



Photos of **3557 'PRESIDENTE RÍOS'** taken at MSB soon after completion.



2-8-2 d/w 1105mm 43½", cyls. 495mmx560mm, built by Borsig in 1925

Ex *FCALP* nos. **40-45**.

3570	w/n 11861	Originally on <i>FCALP</i> . On <i>FCIPH</i> in 1971. At Iquique in 1978 [16].
3571	w/n 11862	Originally on <i>FCALP</i> .
3572	w/n 11863	Originally on <i>FCALP</i> . On <i>FCIPH</i> in 1971. At Iquique in 1978 [16].
3573	w/n 11864	Originally on <i>FCALP</i> . On <i>FCIPH</i> in 1971. At Baquedano in 1978 carrying Maestranza Chinchorro plate (Arica) [16]. Survives as national monument at Baquedano.
3574	w/n 11865	Originally on <i>FCALP</i> .
3575	w/n 11866	Originally on <i>FCALP</i> . At Iquique in 1978 carrying MSB plate [16]. Reincorporated into active fleet 1957 [38], note says ' <i>Traspasado</i> '. Withdrawn 1957 [38] (Not clear which of these two comments came first).

All 69, nos. **3401-3475**, listed in mid 1950s in [19].

Tipo M1 (FCALP classification)

0-6-6-0 Mallets d/w 1105mm 43½", cyls. 400&610x550mm, built by Hanomag in 1913

3620	w/n 6776	ex <i>FCALP</i> 20
3621	w/n 6777	ex <i>FCALP</i> 21
3622	w/n 6778	ex <i>FCALP</i> 22
3623	w/n 6779	ex <i>FCALP</i> 23

No sign in 1942 full *EFE* list [27].

Tipo M2 (FCALP classification)

0-6-6-0 Mallets d/w 1105mm 43½", cyls. 406&635x558mm 16&25x22", built by Baldwin in 1918

Note change of order.

3624	w/n 48219	ex <i>FCALP</i> 26	Listed in [19] in mid 1950s as tipo M.
3625	w/n 48195	ex <i>FCALP</i> 24	
3626	w/n 48196	ex <i>FCALP</i> 25	Listed in [19] in mid 1950s as tipo M.

No sign in 1942 full *EFE* list [27].

Tipo SF (FCALP classification)

2-10-2 d/w 1105mm 43½", cyls. 480x560mm, built by Berliner/Schwartzkopf in 1928

Ordered for the *FC Iquique a Pintados*. Their numbers **1-9** (or **4-10** [Schwartzkopf list], or **7-11?** [11])

4	3704	w/n 9223	
5	3705	w/n 9224	
6	3706	w/n 9225	
7	3707	w/n 9226	On <i>FCIPH</i> in 1961.
8	3708	w/n 9227	Withdrawn 1957 [38].
9	3709	w/n 9228	At Arica on <i>FCALP</i> in 1955. [50] supports presence on <i>FCALP</i> at some stage. On <i>FCIPH</i> in 1961.
10	3710	w/n 9229	At Arica on <i>FCALP</i> in 1955. [50] supports presence on <i>FCALP</i> at some stage.
	3711		Supposedly on <i>FCIPH</i> in 1961. Withdrawn 1957 [38].

No sign in 1942 full *EFE* list [27]. Nos. **3707-3711** listed in [19] in mid 1950s. [32] says three were transferred to the *FCALP* around 1950 to boost the motive power fleet, but that they were soon sent south. This conflicts with two of them having been seen at Arica in 1955, as listed above.

Locos whose *EFE* numbers are unknown

The U.S. Bureau of Commerce Transportation Survey of Chile in 1930 also shows the following six Vulcan IW metre gauge locomotives in the *EFE* fleet:

0-6-0ST d/w 30", cyls. 11"x16", built by Vulcan Iron Works in 1909

?	w/n 1414	ex Germain & Sierra contractors' no. 1 'LAURITA'
?	w/n 1415	ex Germain & Sierra contractors' no. 2 'OLGUITA'

2-6-0 d/w 38", cyls. 13"x18", built by Vulcan Iron Works in 1910

?	w/n 1626	ex Germain & Sierra contractors' no. 3
?	w/n 1627	ex Germain & Sierra contractors' no. 4

0-6-0 d/w 533mm 21", cyls. 247x400mm 9³/₄"x15³/₄", built by Vulcan Iron Works

10.8T. But no known Vulcan locos for Chile match those dimensions.

?	w/n ?
?	w/n ?

The *Red Norte* fleet in 1920

[31] March 1920 reports that the *Red Norte* has 56 locos in service, of which 16 were in a bad state, and 47 out of use of which 20 were awaiting repair. Total 103 locos. 65 were actually needed to be in service at any one time. This was in connection with arranging for 12 locos per year to be overhauled at Barón.



The remains of a 6-wheeled metre gauge tender being used as a tank wagon at Maestranza El Colorado in Iquique. It's origin is currently unknown.

3.2.5 EFE rack and adhesion locos

As the history of these engines is somewhat complicated, isolating them in a separate section will make explaining their lives somewhat simpler. NB Most but not all of these locos have been introduced earlier in the separate sections covering the early years of the *FC Longitudinal Sur*, the *FC Trasandino* and the *FC Arica La Paz*.

Rack and adhesion routes

The *EFE* over time inherited three widely-spaced metre gauge railways using rack locomotives to climb steep gradients, and then constructed one more of broad gauge. These can be summarised as follows:

- 1 The *FC Longitudinal Sur* (see section 3.1.3) possessed two rack sections, between Palquico and Socavón south of Limahuida, and between Matancillas and Pama further north. These had been completed around 1914 and became part of the *Red Central Norte* on its formation in 1916.
- 2 The *FC Trasandino Chileno* (see section 3.1.5) included a number of lengths of rack in the course of its climb from Los Andes to Juncal. It had been completed through the summit tunnel to Argentina in early 1910 and was then taken over by the Chilean state in 1934. Whilst by then it had been electrified for several years, steam locos were retained for snow-clearing duties and other emergencies.
- 3 The *FC Arica La Paz* in the very far north of the country (see section 3.1.6) was constructed between 1906 and 1913 as a requirement of the 1904 Treaty of Peace and Friendship between Chile and Bolivia. The rack sections were between Central and Puquios. Although state-owned from the outset, the Chilean part of the railway only became part of the *EFE* in the 1950s.
- 4 On the bypassing of the Palquico to Socavón and Matancillas to Pama sections in the early 1940s, sufficient rack rails were taken south to install between Lebu and Triángulo on the broad gauge line to Los Sauces, originally private but by then part of the *EFE* network. Two regauged rack locos followed. The Chilean Eastern Central Railway Company which had started building the line in the second decade of the 20th century had intended that this short but steep climb from the coast should be rack-equipped, but a shortage of cash had led them to make do with a pair of Shay locos.

1 Locomotives used on the *Longitudinal Sur* rack sections

For the early history of these locos, please see section 3.1.3 on the *Longitudinal Sur*.

Grupo 1, later tipo U

0-8 $\frac{1}{2}$ -2T d/w 940mm 37", cyls. 480x500mm, built by Esslingen in 1911 (3301-4), and 1913 (3305-6)

First batch ordered during Howard Syndicate construction work on Longitudinal railway [11].

31	?	1	1	3301	w/n 3606	Working Palquico to Socavón in 1919 [5]. Distances run in km 1915 – 9800, 1916 – 18827, 1917 – 10055 [17 part 2]. Rebuilt 1944 to broad gauge for use on <i>Red Sur</i> between Lebu and Triángulo. Withdrawn 1952 dumped at San Bernardo [11].
32	?	2	2	3302	w/n 3607	Palquico to Socavón in 1919 [5]. Distances run in km 1915 – 14156, 1916 – 5740, 1917 – 19290 [17 part 2]. Rebuilt 1944 to broad gauge for use on <i>Red Sur</i> between Lebu and Triángulo.
33	?	3	3	3303	w/n 3608	Palquico to Socavón in 1919 [5]. Distances run in km 1915 – 10352, 1916 – 24680, 1917 – 14667 [17 part 2]. Almost certainly rebuilt as adhesion only loco <i>tipo Ur</i> , no. 3403 in 1943, though 1951 and 1952 lists still have it as <i>tipo U</i> .

34 ? 4 4 3304 w/n 3609

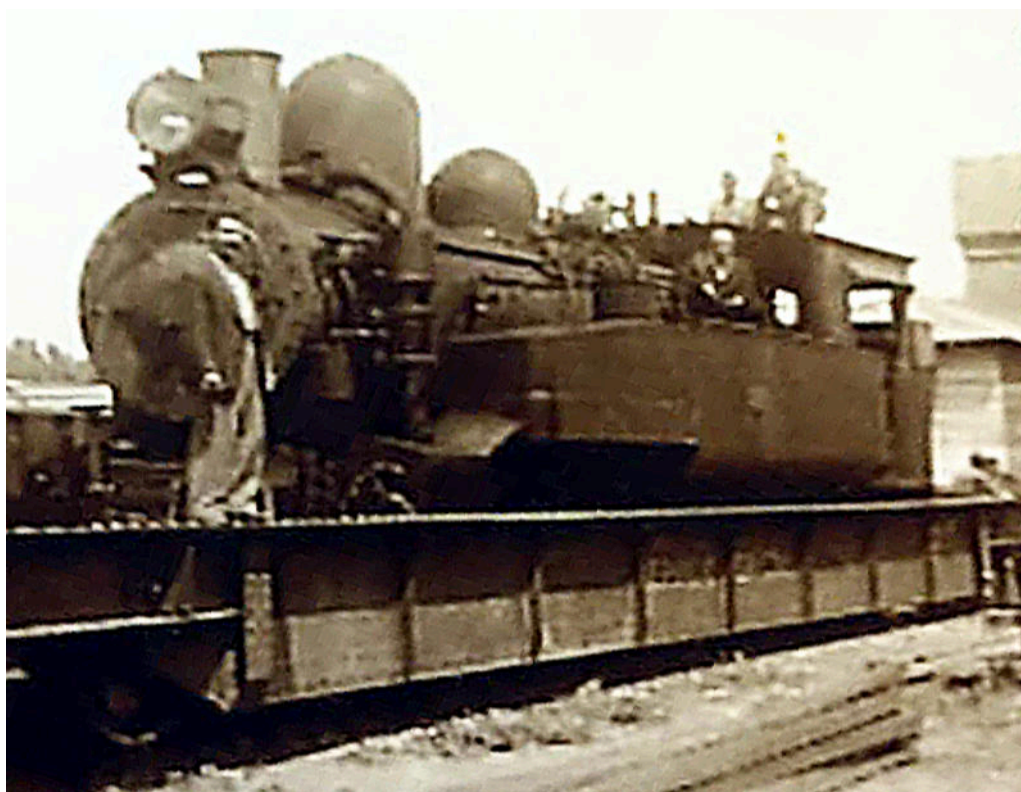
35 ? 5 5 3305 w/n 3666

36 ? 6 6 3306 w/n 3667

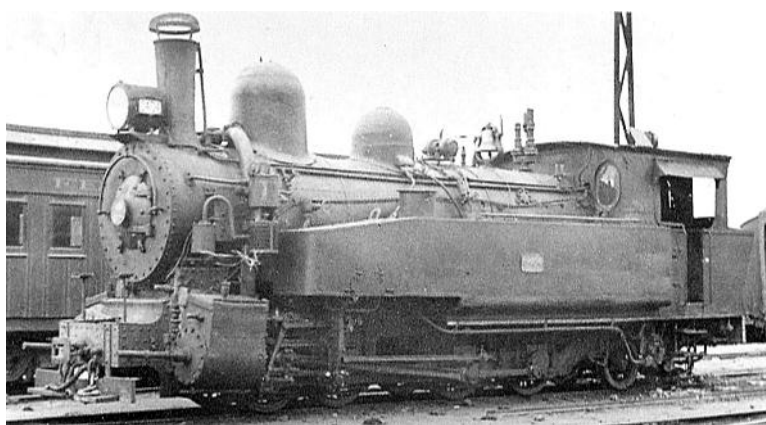
Under Coquimbo supervision 1951. [32] suggests was converted to adhesion only, but was later to be re-converted to rack and adhesion for use on *FCALP*. However, task was never completed and loco was scrapped in 1953.

Matancillas to Pama in 1919 [5]. Distances run in km 1915 – 10281, 1916 – 19196, 1917 – 14203 [17 part 2]. Almost certainly rebuilt as adhesion only loco *tipo Ur*, no. **3404** in 1943. Confirmed as *tipo Ur* in 1951 and 1952 lists. Under Coquimbo supervision 1951. Listed in [19] in mid 1950s. Matancillas to Pama in 1919 [5]. Distances run in km 1915 – 15719, 1916 – 13036, 1917 – 29324 [17 part 2]. Almost certainly rebuilt as adhesion only loco *tipo Ur*, no. **3405** in 1943. Confirmed as *tipo Ur* in 1951 and 1952 lists. Under Coquimbo supervision 1951. Listed in [19] in mid 1950s. Matancillas to Pama in 1919 [5]. Distances run in km 1915 – 0, 1916 – 10118, 1917 – 29268 [17 part 2]. Almost certainly rebuilt as adhesion only loco *tipo Ur*, no. **3406** in 1943. Confirmed as *tipo Ur* in 1951 and 1952 lists. Under Coquimbo supervision 1951. Listed in [19] in mid 1950s.

6 in fleet at 1-1-1921, nos. **3301-6**, and 6 in fleet in 1930 and 1942 [11] [26] [27], ie. just before remaining rack main-line section was bypassed [11]. Only one listed in *RN* fleet in 1951 and 1952, **3303**. [32] says that *tipo Ur* no. **3403**, was subject to a 1948 instruction to reconvert it to rack and adhesion loco **3303**, for the *FCALP*, which task was never completed before it was scrapped in 1953. NB A summary of loco totals in the *EFE's memoria anual* in 1944 seems to imply that the locos for rebuild to broad gauge were **3303** and **3304** whilst **3301** and **3302** were reconstructed as pure adhesion locos.



A very poor photo of a photo, but showing one of these Esslingen O-8z2-2Ts on a broad gauge transporter wagon, presumably for shipment from MSB to La Calera. Note also, the shorter chimney than that seen below, and the protective plate between tank and cylinders.



No. 3404, ie. the erstwhile tipo U no. **3304** after the rack gear had been removed, converting it into a conventional, if unusual, 0-8-2T.

Grupo 2, later tipo V

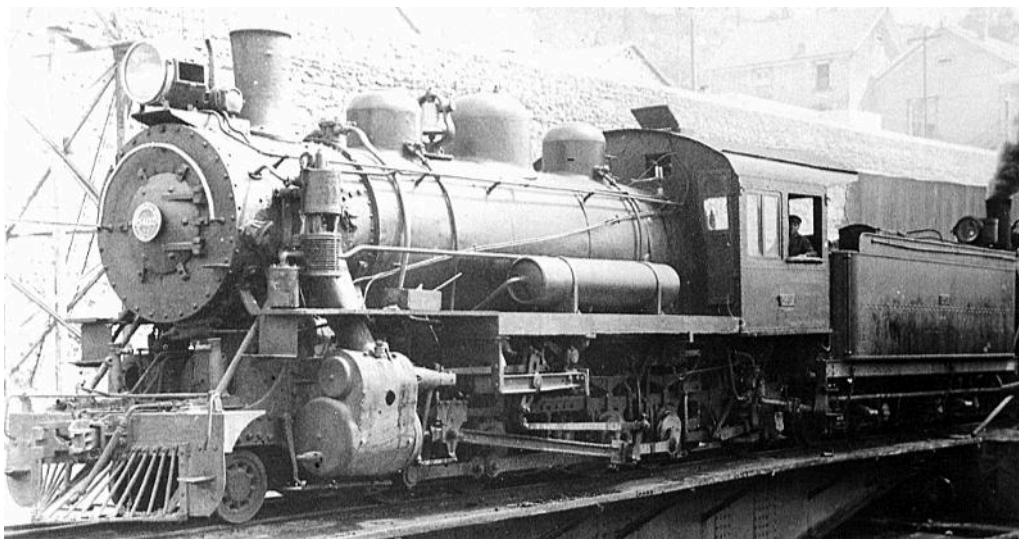
2-8z2-2t d/w 940mm 37", cyls. 483mmx508mm 19"x20", built by Baldwin in 1919

Price \$58,500 dollars each, ordered January 1918 [31], to be delivered in 1 year. Shipped to Coquimbo in August 1919 and erected by end of that year [MFER119]. Working on Palquico to Socavón rack section in 1919 [5]. Baldwin spec books state these were originally numbered **110-2**, but spec card for 51748 states running number was to be **10**. Longish tanks but without kick-up at front bottom unlike *FCALP* 1920 locos. \$27,550 approved in 1920 for spares for these three locos, to be bought direct from BLW [1920 *EFE boletin* volume]. BLW class 12 28/32 ¼CE 1.

- | | | |
|-------|----------------|---|
| 110 7 | 3307 w/n 51748 | Almost certainly rebuilt as adhesion only loco <i>tipo Vr</i> ; no. 3407 in 1943. Confirmed explicitly in lists from 1951 and 1952. Under Coquimbo supervision 1951. Listed as 3407 in 1952 <i>itinerario</i> fleet list. Listed in [19] in mid 1950s. |
| 111 8 | 3308 w/n 51791 | Almost certainly rebuilt as adhesion only loco <i>tipo Vr</i> ; no. 3408 in 1943. Rebuilt at MSB. Confirmed explicitly in lists from 1951 and 1952. Under Coquimbo supervision 1951 but leased to <i>FCALP</i> , and was at Arica in 1955 [11]. Listed in [19] in mid 1950s. Withdrawn from <i>FCALP</i> in 1956-7 [28]. [32] confirms it went to the <i>FCALP</i> before scrapping in 1956. |
| 112 9 | 3309 w/n 51839 | Almost certainly rebuilt as adhesion only loco <i>tipo Vr</i> ; no. 3409 in 1943. Confirmed explicitly in lists from 1951 and 1952. Under Coquimbo supervision 1951. Listed in [19] in mid 1950s. Was at Arica on <i>FCALP</i> in 1955. |

[11] says 3 in fleet at 1-1-1921, nos. **3307-9**, and 5 in fleet in 1930 [US report] and 1942 [26] [27], ie just before rack mainline sections were bypassed. This last source explicitly includes the following two locos as well. All five locos of *tipo V* were rebuilt as pure adhesion machines of *tipo Vr* at MSB and Maestranza Ovalle during 1944.





The photos above and below show tipo Vr no. 3407 (ex tipo V no. 3307) after conversion to a purely adhesion machine.

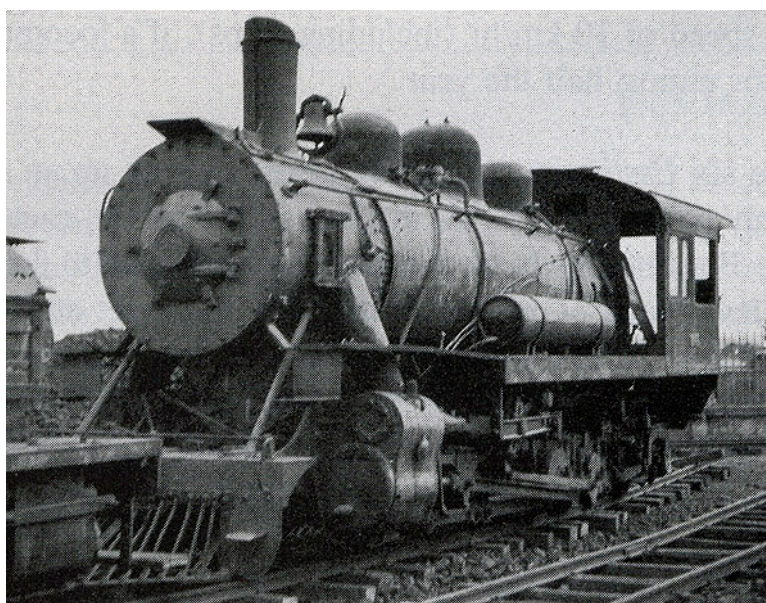
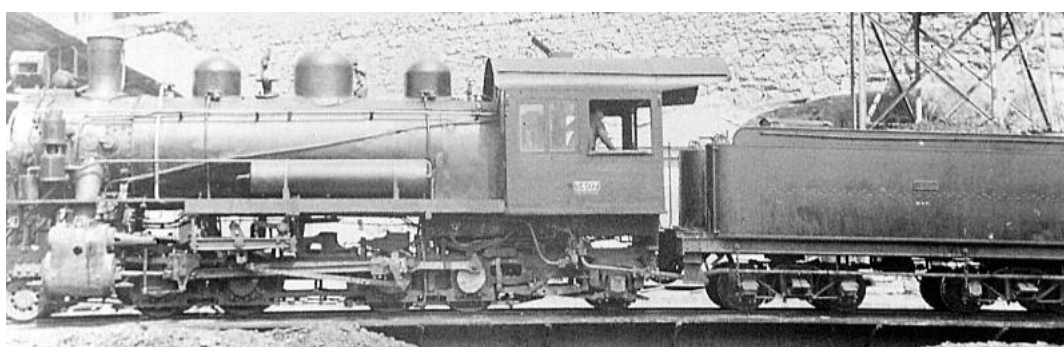


Photo by David Ibbotson 1955 at Chinchorro, via Ian Thomson's book *Red Norte*. Precise identity unknown, but unlikely to be **3407** as the bell is mounted in a different place.

Extra rack locos bought from the *FCALP*

On 2nd February 1927 \$200,000 (pesos) were to be paid to the *FCALP* for two rack locos sold to the *EFE* for use between Pedegua and Petorca [MOBR2248]. They were Baldwin 2-8z2-2Ts. The 1929 *EFE memoria anual* states that the *Red Norte* possessed eleven rack locos at that time. This agrees with those listed above, ie. six *tipo U* locos purchased for the *RN*, three Baldwins of *tipo V* also listed above, and these two transferred from the *FCALP* and also designated *tipo V*.

Tipo V

2-8z2-2T d/w 940mm 37", cyls. 483x508mm 19"x20", rack cyls. 450x450mm 17¾"x17¾", built by Baldwin in 1920 (26) and 1923 (27)

Long side tanks with horizontal top line and with bottom line sloping up at front. BLW class 12-28¼CE no. 4 and class 12-30/32¼CE no. 1.

FCALP 26

3310 w/n 52814

This loco had plate saying BLW extra order rebuild 1249 of 8/27. Note that this was when these locos moved to the *EFE*. Modifications may well have been needed as it is clear that Baldwin had had difficulty in matching Esslingen's capabilities in the field of rack locos. Almost certainly rebuilt as adhesion only loco *tipo Vr*, no. **3410** in 1943. Confirmed explicitly in lists from 1951 and 1952, though not in 1952 itinerario fleet list. Under Coquimbo supervision 1951 but leased to *FCALP*. Not listed in [19] in mid 1950s. Was at Arica on *FCALP* in 1955.

FCALP 27

3311 w/n 57078

Almost certainly rebuilt as adhesion only loco *tipo Vr*, no. **3411** in 1943. Confirmed explicitly in lists from 1951 and 1952, though not in 1952 itinerario fleet list. Under Coquimbo supervision 1951. Listed in [19] in mid 1950s.

Both listed in full *EFE* 1942 list [27]. All five locos of *tipo V* were rebuilt as pure adhesion machines of *tipo Vr* at MSB and Maestranza Ovalle during 1944.



Whilst this image has been used earlier in the *FCALP* pages, it is repeated here so that the differences between the *FCALP* locos and those delivered earlier to the *EFE* (see picture a couple of pages earlier) can be seen. This one, and probably its slightly later *FCALP* stablemate, have upturned lower front corners to longer tanks in order to maintain access to the rack valve gear, and an unusual cab door siting right at the front.

Tipo U-a

2-8z2-2T d/w ?, cyls. ?, built by Esslingen in 1930

Esslingen list suggests built with numbers **12-14**. The later Esslingen locos built in 1930 and 1950 were identifiable by their longer domes. These locos were explicitly designated *tipo Ua* in 1942 *EFE* list.

3312 w/n 4231

[32] suggests moved directly to *FCALP* in 1944. The 1944 *EFE memoria anual* explicitly lists two of these three locos as *tipo Ub* (but no numbers given), whilst one remained as *tipo Ua*. This engine given as *tipo Ua* in a 1951 list, but shown as *Ua 0-8-2* in a 1952 list!. Under *Red Norte* supervision 1951 but leased to *FCALP*. Withdrawn 1968? [49].

3313 w/n 4232

The 1944 *EFE memoria anual* explicitly lists two of these three locos as *tipo Ub* (but no numbers given), whilst one remained as *tipo Ua*. [32] suggests moved to *FCTC* in 1944 (but Jens Schindler has debunked this suggestion on technical grounds), and then to *FCALP* around 1946. Under *Red Norte* supervision 1951 but leased to *FCALP*.

Confirmed as *tipo Ur* in a 1951 list, but shown as *Ua 0-8-2* in a 1952 list! Another 1951 list says “*Locomotoras 3313 y 3314 se transformaron a tipo U-a por habérseles suprimido la tercera corona.*” which suggests that these two were those that had been altered to *tipo Ub*. Withdrawn 1968? [49].

3314 w/n 4233

The 1944 *EFE memoria anual* explicitly lists two of these three locos as *tipo Ub* (but no numbers given), whilst one remained as *tipo Ua*. [32] suggests moved to *FCTC* in 1946 for a short period before transfer to the *FCALP* (but Jens Schindler has debunked this suggestion on technical grounds). Under *Red Norte* supervision 1951 but leased to *FCALP*. Confirmed as *tipo Ur* in a 1951 list, but shown as *Ua 0-8-2* in a 1952 list!. Another 1951 list says

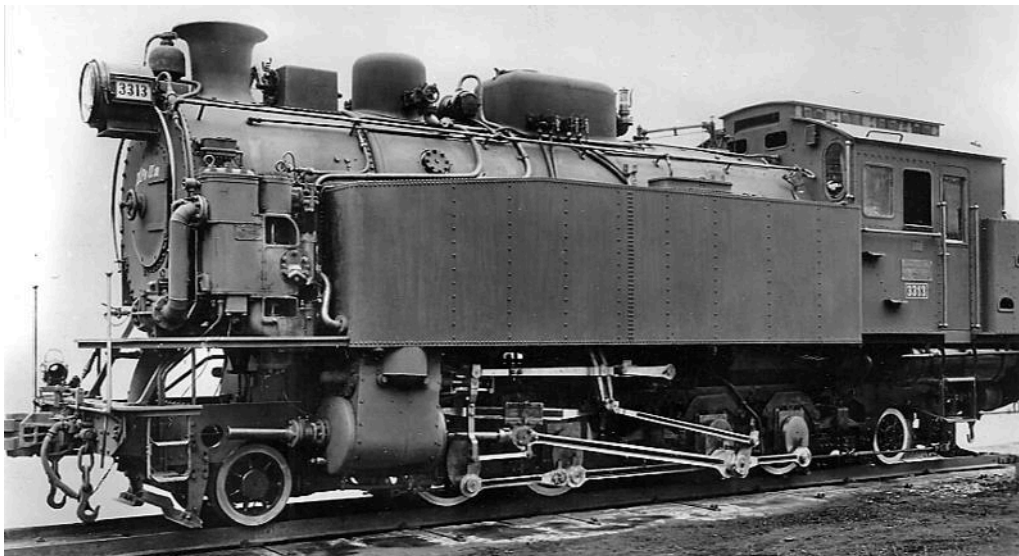
“*Locomotoras 3313 y 3314 se transformaron a tipo U-a por habérseles suprimido la tercera corona.*” which suggests that these two were those that had been altered to *tipo Ub*.

Withdrawn 1968? [49].

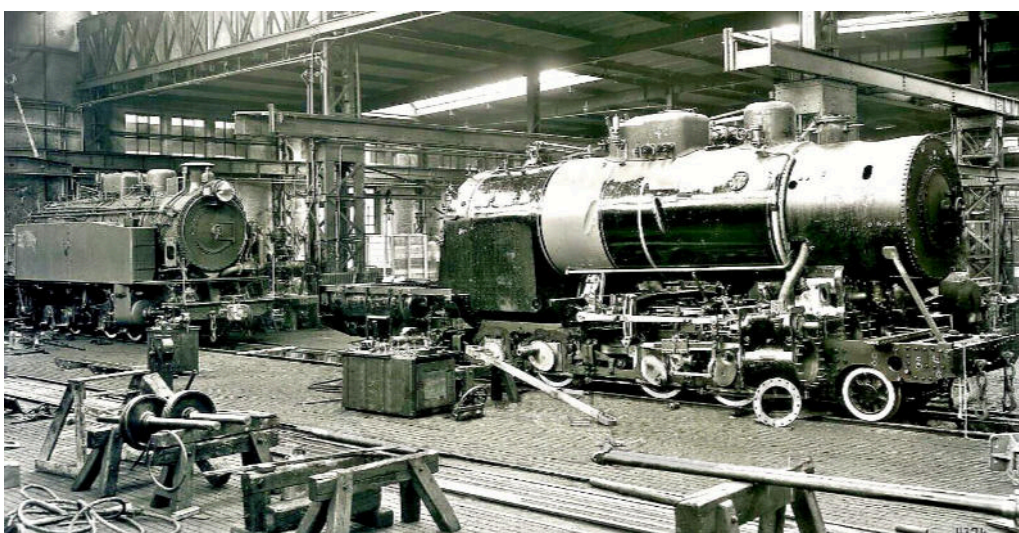
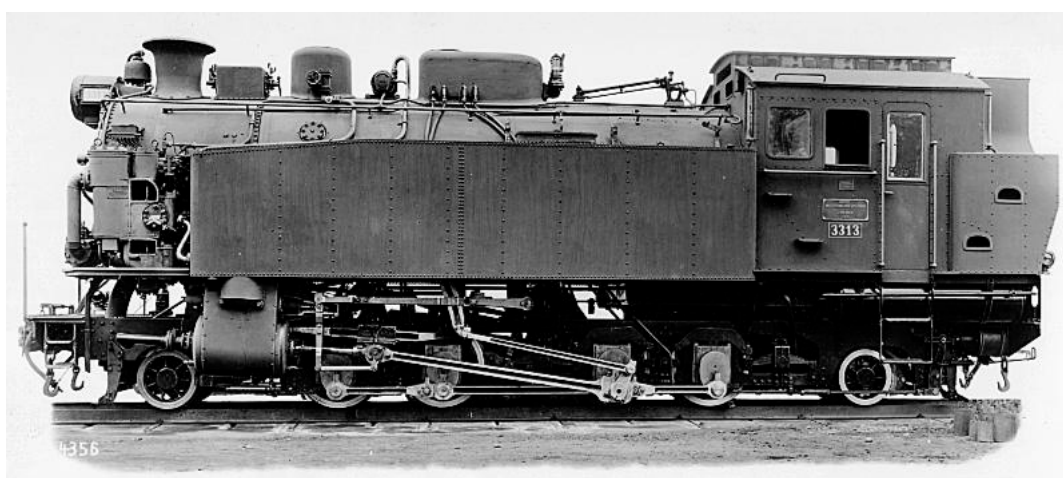
NB Transfer of any of these to the *FCTC* would have required that the two bar rack pinions be replaced by three bar versions, and vice-versa on transfer to the *FCALP*. Whilst this might have been done on one loco as a trial, it seems unlikely that the effort would have been repeated on a second loco if transfer away again was to happen almost immediately. Of course this might have been easier if suitable three bar rack pinions had been available from *FCTC* locos. However, Jens Schindler has pointed out that the heights of the racks above rail level differ and that any such transfer would have been very difficult to engineer.

However, the alternative interpretation of “*la tercera corona*”, ie. that a third rack pinion had been added fore or aft of the original two, seems equally impractical. It could have been done to provide extra rack braking with less stress on the original two pinions, but not to transmit tractive effort as an adhesion axle would inevitably obstruct the necessary coupling rods. This may have to remain a puzzle.

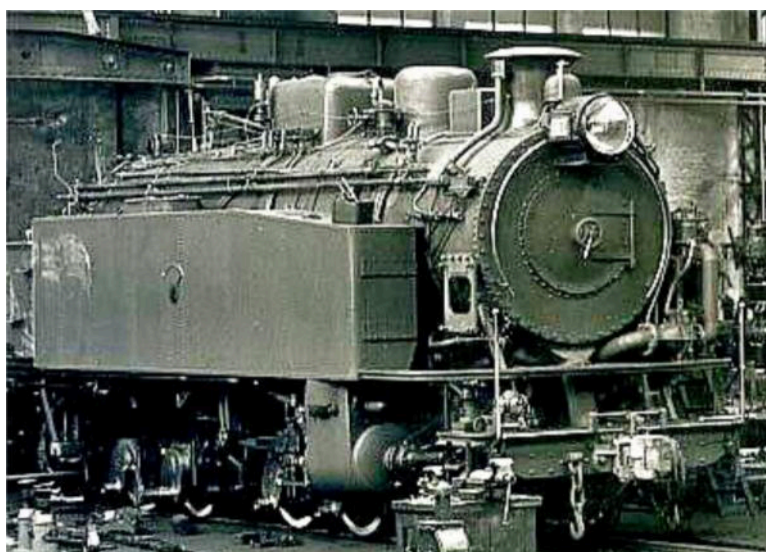
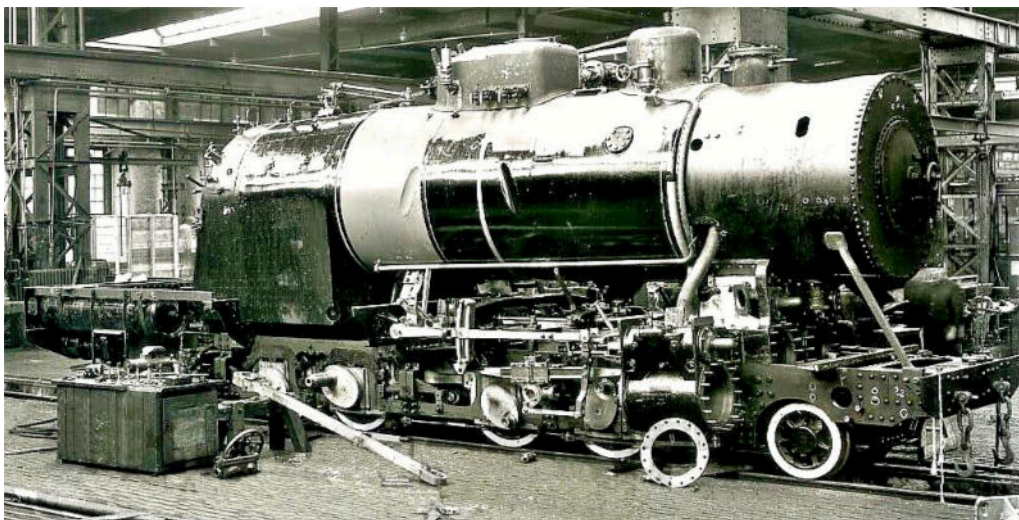
All three were in the full 1942 list [27]. All three were in *RN* stock in 1942 [26], 1951 and 1952. All three listed in [19] in mid 1950s. [32] suggests all three scrapped 1968.



Tipo U-a no. 3313.



This wonderful photo, source unknown, shows two of these 1930 or 1950 Esslingen 2-8z2-2Ts under construction at the Esslingen works. In view of the clarity of the image, two cropped sections have been enlarged and are displayed below.



The end of *Red Norte* rack operations

The inland route of the *Longitudinal Sur* between La Ligua and Ovalle via Limahuida was very slow and expensive to operate, not least because of the two rack sections, between Palquico and Socavón and further north between Matancilla and Pama. This route had only been chosen in the first place because there were worries about the vulnerability of the alternative coastal route to attack from the sea. As such concerns diminished thoughts turned to bypassing the difficult stretches of railway. Eventually, in the early 1940s, the more southerly section was completely duplicated by extending the Longotoma branch north up the coast to meet the Los Vilos to Limahuida line. During the same period the northern rack section was made redundant by an avoiding line between Matancilla and a point west of Alcaparrosa. The net result was that by 1944 the *Red Norte* had no further need of any rack engines.

In the short term, the majority of the fourteen redundant machines, excepting only the three newest locos of *tipo Ua*, were converted to plain adhesion operation by removing the rack pinions and gear. The resulting conversions became known as *tipos Ur* and *Vr*. A further two locos, numbers **3301** and **3302**, were rebuilt to broad gauge at MSB and were shipped south along with sufficient length of rack to equip the coastal climb out of Lebu as a rack railway as far as Triángulo, thus replacing the two Shays that had previously worked that route.

2 Locomotives used on the *FCALP* rack sections

For earlier *FCALP* loco history, please see section 3.1.6 of this file.

Tipo V?

2-8z2-2T d/w 940mm 37", cyls. 483x508mm 19"x20", rack cyls. 432x457mm 17"x18", built by Baldwin in 1916

75

3335? w/n 43337

Or 3355?



Photo by David Ibbotson from 1955, showing tank extension, and modified cab and bunker.

Tipo U?

0-8z2-2T d/w 940mm 37", cyls. 480x500mm , rack cyls. 430x450mm, built by Esslingen in 1910-11

These were built just prior to those for the *Lonjitudinal Sur*, and seem to have been similar if not identical to those machines.

78

331? w/n 3561

[32] says ran 2,658km in 1929. Shown in 1937 *FCALP* list [20].

79

331? w/n 3562

Not shown in 1937 *FCALP* list [20].

One of the Esslingen 0-8z2-2Ts, either here or more probably on the *FC Lonjitudinal*, was named '**PEDRO MONTT**' as illustrated in an Esslingen GA drawing.

Tipo Uc

2-8z2-2T d/w 940mm 37", cyls. 450x450mm, rack cyls. 432x557mm 17"x22", built by Esslingen in 1924 (3315-6), 1925 (3317-9), and 1926 (3320) for the *FCALP* (their nos. 78-83)

These locos had more obvious slopes on the bunker front ends and smaller cabside windows than the bigger *Ua* engines built in 1930 and 1950.

78

3315 w/n 4127

ex *FCALP* 78 Survives at Arica but with 3331 plates.

79

3316 w/n 4128

ex *FCALP* 79 Withdrawn mid-60s [32]. Scrapped 1977 [16].

80

3317 w/n 4153

ex *FCALP* 80 Withdrawn mid-60s [32]. Scrapped 1977 [16].

81

3318 w/n 4154

ex *FCALP* 81 Withdrawn mid-60s [32]. Scrapped 1978 at Chinchorro [16].

82

3319 w/n 4155

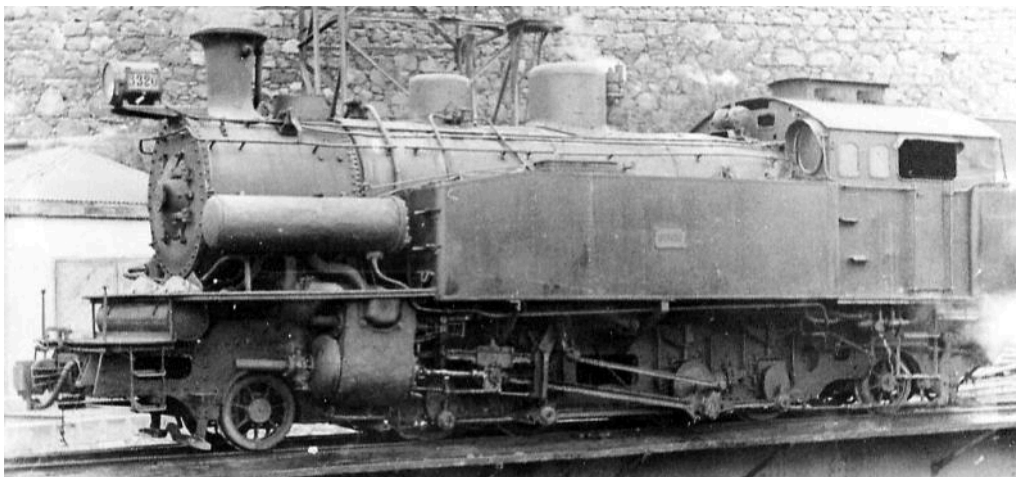
ex *FCALP* 82 Written off after accident [16] at *FCALP* Km. 102 in 1949 [32].

83

3320 w/n 4188

ex *FCALP* 83 Withdrawn mid-60s [32]. Scrapped ??? [16].

None in full *EFE* list of 1942 [27]. Nos. 3315-3318 and 3320 listed as tipo Uc in mid 1950s [19].



Tipo Uc no. 3320.



Tipo Uc no. 3315 (as evidenced by the worksplate number) as plinthed in Arica in 2019, but falsely bearing a number plate from *Ua* no. **3331**. A comparison of the boiler diameter and chimney height with that of a *tipo Ua* loco in the next photo down, will illustrate that the *Uc* engines were slightly smaller. Ian Thomson has suggested that the loco is actually no. **3317**, but from what evidence is unknown.



Tipo Ua

2-8z2-2T d/w 940mm, cyls. 500x500mm, built by Esslingen in 1950 for FCALP

Rack cyls. 450x450mm. Identical to the 1930 locos for the *EFE*. These later locos built in 1930 and 1950 were iden-

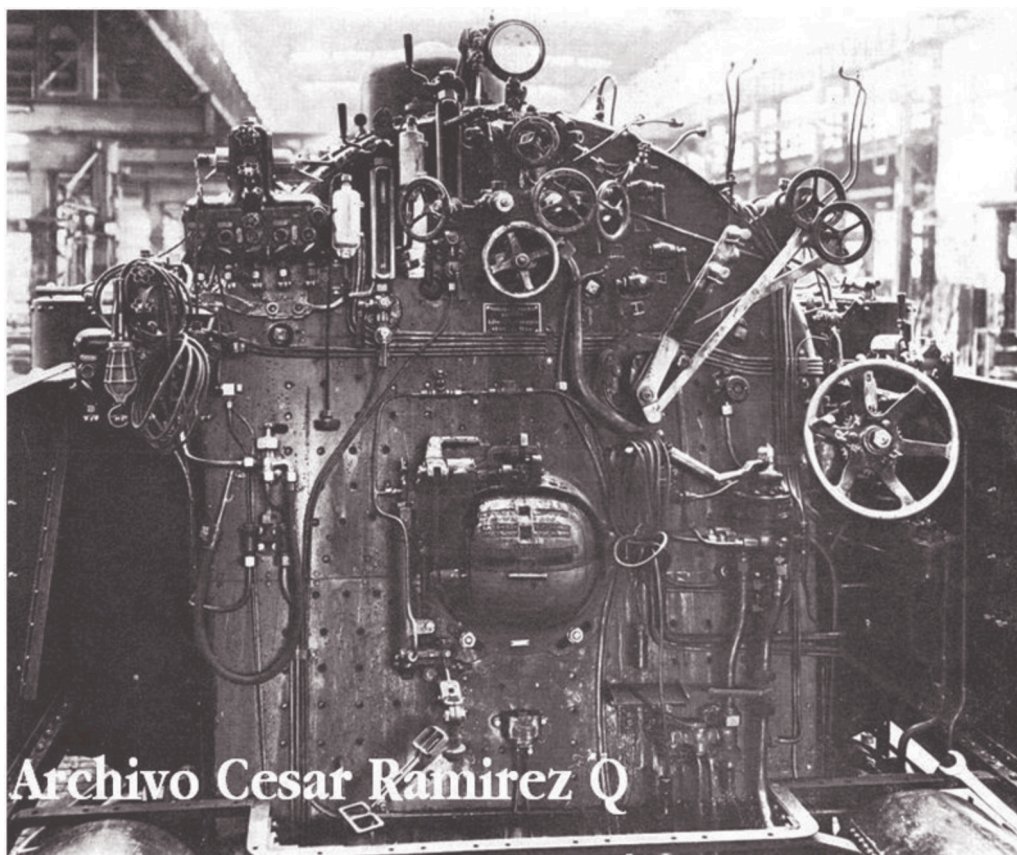
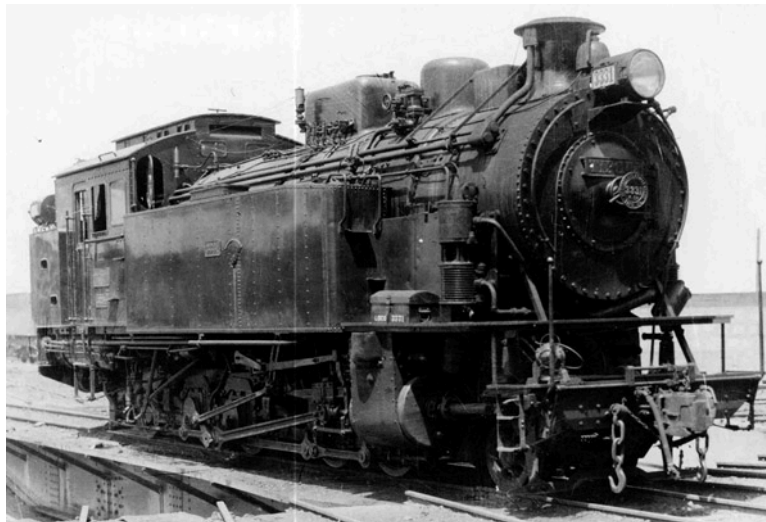
tifiable by their longer domes.

3330 w/n 4963

3331 w/n 4964

3332 w/n 4965

All three listed as *tipo U-a* in [19] in mid 1950s. [32] and [49] suggest all three scrapped 1968.



The backhead of a Chilean Esslingen rack loco, possibly of *tipo Ua* though that is not certain. The photo may have been taken before the engine was completed, or possibly at Chinchorro or one of the *EFE* maestranzas.

Rack and ex rack-locos shipped north from the *Red Norte* in the late 1940s or early 1950s

After the demise of the *Red Norte* rack sections in the early 1940s a number of rack locos were rebuilt as pure adhesion engines, as explained above. Several of these, as well as locos retaining their rack equipment, were transferred to the *FCALP* after, or even perhaps before, its merger into the *EFE* in 1953.

Tipo Vr

2-8z2-2t d/w 940mm 37", cyls. 483mmx508mm 19"x20", built by Baldwin in 1919

Originally with longish tanks but without kick-up at front bottom unlike *FCALP* 1920 locos. Tanks stripped off adhesion rebuilds to make them into tender locos.

- | | | |
|-------------|-----------|--|
| 3408 | w/n 51791 | Ex <i>Red Norte tipo V</i> no. 3308 . Rebuilt at MSB as adhesion only loco <i>tipo Vr</i> ; no. 3408 in 1943. Under Coquimbo supervision 1951 but leased to <i>FCALP</i> , and was at Arica in 1955 [11]. Listed in [19] in mid 1950s. Withdrawn from <i>FCALP</i> in 1956-7 [28]. [32] confirms it went to the <i>FCALP</i> before scrapping in 1956. |
| 3409 | w/n 51839 | Ex <i>Red Norte tipo V</i> no. 3309 . Rebuilt as adhesion only loco <i>tipo Vr</i> ; no. 3409 in 1943. Was at Arica on <i>FCALP</i> in 1955. |

Tipo Vr

2-8z2-2T d/w 940mm 37", cyls. 483x508mm 19"x20", rack cyls. 450x450mm 17¾"x17¾", built by Baldwin in 1920 (26) and 1923 (27)

Originally with very long tanks with a kick-up at front bottom. Tanks stripped off adhesion rebuilds to make them into tender locos.

- | | | |
|-------------|-----------|---|
| 3410 | w/n 52814 | Originally on <i>FCALP</i> but sold to <i>EFE Red Norte</i> in 1927. Ex <i>tipo V</i> no. 3310 , ex <i>FCALP</i> no. 76 , ex 26 , ex 20 ? Rebuilt as adhesion-only loco <i>tipo Vr</i> ; no. 3410 in 1943. Under Coquimbo supervision 1951 but leased to <i>FCALP</i> . Not listed in [19] in mid 1950s. Was at Arica on <i>FCALP</i> in 1955. |
|-------------|-----------|---|

Tipo Ua

2-8z2-2T d/w ?, cyls. ?, built by Esslingen in 1930

The later Esslingen locos built in 1930 and 1950 were identifiable by their longer domes. These locos were explicitly designated *tipo Ua* in 1942 *EFE* list. As these were virtually identical to existing *FCALP* locos and were also relatively modern, they seem to have been transferred north to Arica as active rack locos rather than being rebuilt to adhesion-only mode.

- | | | |
|-------------|----------|---|
| 3312 | w/n 4231 | [32] suggests moved directly to <i>FCALP</i> in 1944. The 1944 <i>EFE memoria anual</i> explicitly lists two of these three locos as <i>tipo Ub</i> (but no numbers given), whilst one remained as <i>tipo Ua</i> . This engine given as <i>tipo Ua</i> in a 1951 list, but shown as <i>Ua 0-8-2</i> in a 1952 list!. Under <i>Red Norte</i> supervision 1951 but leased to <i>FCALP</i> . Withdrawn 1968? [49]. |
| 3313 | w/n 4232 | The 1944 <i>EFE memoria anual</i> explicitly lists two of these three locos as <i>tipo Ub</i> (but no numbers given), whilst one remained as <i>tipo Ua</i> . Transferred to <i>FCALP</i> around 1946. Under <i>Red Norte</i> supervision 1951 but leased to <i>FCALP</i> . Confirmed as <i>tipo Ur</i> in a 1951 list, but shown as <i>Ua 0-8-2</i> in a 1952 list! Another 1951 list says " <i>Locomotoras 3313 y 3314 se transformaron a tipo U-a por habérseles suprimido la tercera corona.</i> " which suggests that these two were those that had been altered to <i>tipo Ub</i> . Withdrawn 1968? [49]. |
| 3314 | w/n 4233 | The 1944 <i>EFE memoria anual</i> explicitly lists two of these three locos as <i>tipo Ub</i> (but no numbers given), whilst one |

remained as *tipo Ua*. [32] suggests moved to *FCTC* in 1946 for a short period before transfer to the *FCALP* (but Jens Schindler has debunked this suggestion on technical grounds). Under *Red Norte* supervision 1951 but leased to *FCALP*. Confirmed as *tipo Ur* in a 1951 list, but shown as *Ua 0-8-2* in a 1952 list!. Another 1951 list says “*Locomotoras 3313 y 3314 se transformaron a tipo U-a por habérseles suprimido la tercera corona.*” which suggests that these two were those that had been altered to *tipo Ub*. Withdrawn 1968? [49].

3 Locos used on the *FCTC* rack sections

For earlier *FCTC* loco history, please see section 3.1.5 of this file.

Tipo X

2-6z2-2T (3324-5) and 2-6z2-4T (3326) d/w 900mm, cyls. 390x500mm, built by Borsig in 1905 (3324-5) and 1906 (3326)

Purchased by the *FCTC*. Rack cyls. 390x450mm.

3324	w/n 5507	ex <i>FCTC</i> 4, previously ? 1 & ????
3325	w/n 5508	ex <i>FCTC</i> 5, previously ?
3326	w/n 6063	ex <i>FCTC</i> 6.

None in full *EFE* list of 1942 [27]. All three listed in [19] in mid 1950s, and in *EFE* 1955 list.

Tipo Z

0-8+6z2T d/w 36", cyls. 16½"x19" (front adhesion?) / 13"x14" (front rack?) / 18"x19" (rear rack?), built by Kitson in 1907 (3347), 1908 (3348), and 1909 (3349)

Purchased for the *FCTC*. Why were these locos designated *tipo Z* along with the solitary surviving Esslingen, when it would have been much more logical for them to have been *tipo Y*?

3347	w/n 4488	ex <i>FCTC</i> 7.	
3348	w/n 4598	ex <i>FCTC</i> 8.	Survives at Los Andes.
3349	w/n 4664	ex <i>FCTC</i> 9.	Bears a plate ‘ <i>Reformada en los talleres del FCTC Los Andes 1914</i> ’. Presumably that was when the additional front rack cylinders were removed. On display at Parque Quinta Normal in Santiago.

None in full *EFE* list of 1942 [27]. All three listed in [19] in mid 1950s Also in *EFE* list 1955.



No. **3348** dressed up for the occasion of the visit of President Juan Perón of Argentina to Chile. Note the built up coal bunker with greedy boards.

Tipo Z

6z3-8-0T d/w front 29.5" & rear 35.75", adhesion cyls. 15 3/8"x19 3/4"; rack cyls. 21 1/4"x17 3/4", built by Esslingen in 1908 (10), and 1911 (11)

9 then 10	w/n 3477 3350	Delivered as no. 9 , but renumbered 10 after delivery of Kitson no. 9 . Worked until 1963, when rack gear was damaged. Hauled dead to Los Andes and stored, then later scrapped.
11	w/n 3623 3351?	Believed wrecked near Juncalcillo, in avalanche or possibly just covered by scree during the years after an accident. This almost certainly took place before the locos gained <i>EFE</i> numbers.

None in full *EFE* list of 1942 [27]. Listed in *EFE* 1955 list.

Problems and modifications

Jens Schindler has suggested that there are important differences between the two surviving Kitson locos, particularly in the way that the rack drive frame is affixed to the bogie frames. This may sound like a minor detail, but given the accidents that occurred on this line it has crucial implications for the safety of trains when a runaway is anticipated and the rack bandbrakes are applied.

Notes from the agents Wessel Duval, sent to Baldwin when a loco was being ordered for the *FCALP*, say "Rack frame should be carried directly by adhesion axles without any springs. The *Trasandino* locomotives have the rack frame attached to main frame with springs between, with the result that when the locomotive gets too much speed and the band brakes are applied suddenly, the springs compress and the pinions mount the rack, causing generally the ditching of train. This accident has occurred several times on the Transandine, and the type has been condemned by the Chilean officials." It is not yet clear what differences there were between the Esslingen and K-M locos on the *FCTC* in this regard, or what later modifications were made.

3.3 Independent railways

3.3.1 *El FC de Mejillones a Caracoles*

Background

When this file was first assembled it was thought that the never-completed railway from the port of Mejillones to the rich silver deposits of Caracoles was to be of metre gauge, and thus a section was created here though no details had been found of the first locomotives.

More recently, it has been confirmed that the railway's construction was commenced on the gauge of 3' 6", and thus what information has been found has been moved to the 'Chilean intermediate gauges' file, where it can be found in section 2.4.6.

3.3.2 *El FC del Llano del Maipo*

Background

1 metre gauge, from Santiago Pirque station to Barrancas via Puente Alto. Concession granted in 1889 to Señor Domingo Concha Y Toro, but transferred the following year to the *Sociedad del FFCC del Llano del Maipo*. The railway opened in 1893 from the Pirque station at what is now the Plaza Italia in Santiago, southward to Puente Alto and Pirque. Originally intended to extend up the Cajón del Maipo and into Argentina. Electrified after 1925.

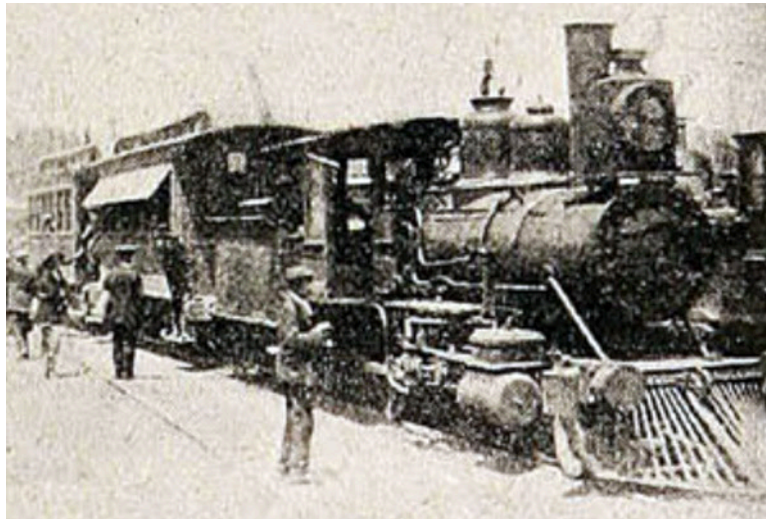
2-4-0 Passenger loco, d/w 37", cyls. 10" x 16", built by Baldwin in 1891

Weight 17 tonnes [13]. Ordered via Hemenway & Browne for 'FC Pirque' [Connelly's BLW list]. Baldwin class 6-14C.

1 'PIRQUE'

w/n 11601

Ran 5400km in late 1891, 52740km in 1892 (largely on pw trains after the arrival of no. 2), and 8640km in 2nd half of 1893. In the first half of 1893 a joint figure for both locos was 29206km, with similarly the first half of 1894 seeing a total of 29289km. In 1910 this loco was used for passenger trains whilst the other engines were on mixed trains.



This photo from Sucesos 366, on the occasion of the opening of the 60cm gauge line up the Cajón del Maipo, shows one of nos. **1, 2, 3, or 4**, but it is not yet clear which.

2-6-0 d/w 39", cyls. 305x457mm 12"x18", built by Baldwin in 1892 (2), 1900 (3), 1904 (4) and 1911 (5)

25T. Locos **3-5** had higher boiler pressure, 160lbs. as against 130lbs. Baldwin class 8-18D nos. 75, 94, 110 and 129. Specs. are in vol. 17 p189, vol. 23 p168, vol. 26 p295 and vol. 39 p291. Erecting card drawing for the last engine numbered 729-71 7021 is in the DeGolyer Library collection.

2 'LLANO DE MAIPO'

w/n 12414

Also imported by Hemenway & Browne. Ran 23550 km in 1892 after entering service on June 23rd. In 2nd half of 1893 ran 30529km on the passenger trains. For other joint figures see no. 1 above.

3? 'MELCHOR CONCHA y TORO'

w/n 18511

Class 8 18 D no. 94. Imported directly by the Llano del Maipo company.

4 'RAMÓN SUBERCASEAUX'

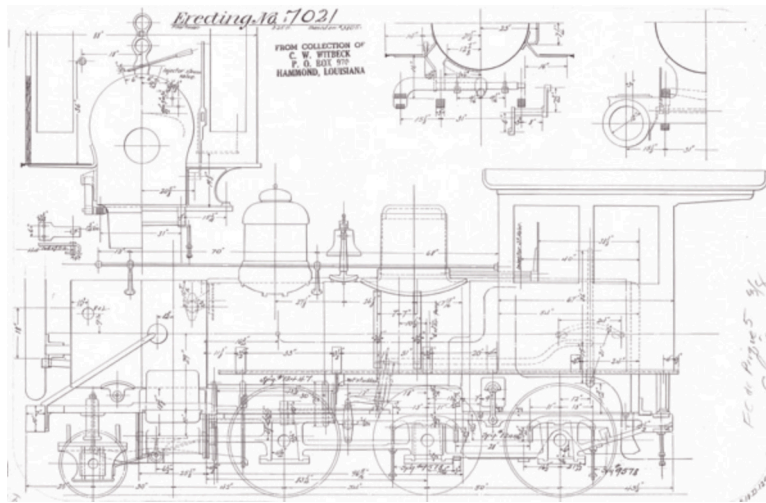
w/n 23948

Class 8 18 D no. 110.

5 'MAGDALENA VICUÑA'

w/n 36431

Class 8 18 D no. 129.



Baldwin erecting card drawing for one of the above 2-6-0s.

2-8-0 d/w 39", cyls. 15x18", built by Baldwin in 1913

BLW spec in vol. 49, p 179. Class 10 24 E no. 185.

6 '?' w/n 40912 Nick-named 'El Arratia' after its driver, who may well have been of Basque origin.



BLW archive pic; hi-res versions available from Railroad Museum of Pennsylvania.

Six locos operated in 1916, according to source [17]. The line was electrified by Siemens-Schuckert in 1925, and the fate of the locos after that time is unknown.

Baldwin drawings

The collection of Baldwin drawings at the deGolyer Library, Southern Methodist University, includes side elevation (SE) or cross section (CS) drawings for one design built for the *FC de Llano de Maipó*.

Index#	DWG#	Tracing#	Road name	Road#	Date	Baldwin class	Number	Wheel	Dwg typ	Size
729-71	7021	-	Llano de Maipo	5	1911	08-18 D	129	2-6-0	SE/CS	3

The list of drawings in which these details were found is at <https://www.smu.edu/~media/Site/Libraries/degolyer/pdf-s/BLW-EDWG-RoadName.pdf> whilst arrangements to purchase copies can be found at <https://www.smu.edu/libraries/degolyer/Research/Permissions>

3.3.3 General Cruz to Pemuco and Cartago

Background

Metre gauge. This ran eastward from the *Red Sur* mainline, roughly at the latitude of the city of Concepción. The promoters seem to have include Sr. Alejandro Martínez Gálvez who had an estate in the vicinity, and Sr. Zenón Méndez Urrejola. It was opened in 1908, 50km to Cartago plus 6 km extra to the Camarico. However, it was cut back in 1918 to Pemuco 25km. It was closed totally in 1945?

The line had two locos in 1930. S. Marin V. says '*dos locomotoras Borsig de 14 toneladas de peso*'



From a short article about this line in *Zigzag* issue 195.

3.3.4 El FC de Quintero



Whilst this map shows a proposed northern route to the town of Quintero from La Calera, rather than the route as actually built, it is likely that they were very similar.

Background

Not to be confused with the later broad gauge *FC de San Pedro al Puerto de Quintero* (though the 1930 US report does exactly that). This ran from Nogales north of La Calera, westward up and over a col and continued to a new Quintero town and port. The railway ‘concesionario’ and promotor of the port was don Luis Alberto Cousiño, as confirmed in decreto 4,044 of 7th September 1912 [].

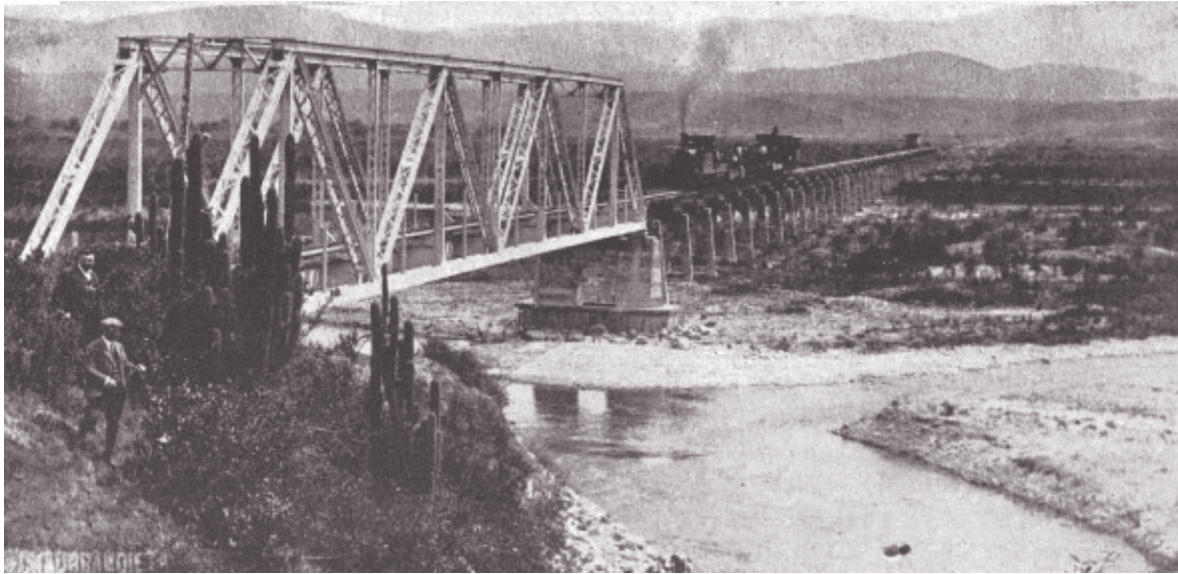
A paragraph in the *EFE Boletín* for 1915, p893-4 discusses a request by “don Bernardo Larraín, en representación del Ferrocarril de Nogales a Quintero” to be permitted to keep “materiales depositados en la estación de San Pedro, destinados a la construcción del citado ferrocarril”.

It had one steam loco and two coaches in the late 1920s, but was closed in the 1930s after the completion of the alternative broad gauge line from San Pedro.



The above photo was supposedly taken on the Quintero metre gauge, perhaps during construction, but no other details were known until the

photo below appeared. The viaduct shown comprised the wooden spans on concrete piers which made up the approaches to a big steel river bridge, but the precise location on this railway's route has not yet been ascertained.



Although not a good photo, this image shows that the concrete piers and wooden spans formed the approach to a big steel river bridge. The loco in the background appears to be the same ex *FCTC* loco seen above and below.

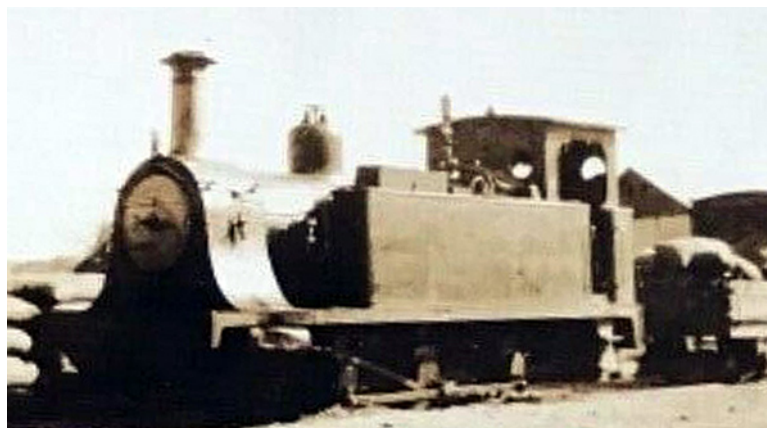
0-6-0T d/w 39", cyls. 13"x20", built by Yorkshire in 1898

More recently, in 2019, a photo has come to light showing an outside-cylindered 0-6-0T at Quintero in 1923. This would appear to be the Yorkshire Engine Company loco that had been used during construction of the summit tunnel on the *Trasandino*. (See that section, above).

?

w/n 554

The later history of this loco is mysterious. One suggestion was that it went to the *FC Longitudinal*, possibly confusing that with the *FC de Quintero*, whilst others suggest that it joined its YECo sister engine on the Santa Fe Land Co. system in northern Argentina.



YECo outside-cylinder 0-6-0T no. 554, seen at Estación Quintero in 1923. This image was posted on the *Tren Expreso a la Memoria* Facebook page by don Fransisco Urriola. The original caption on the photo was in English but the source is unknown.

3.3.5 The Antofagasta (Chili) & Bolivia Railway

El FCAB

Regauging to 1 metre

The *FCAB* was originally of 2' 6" gauge. The main re-gauging work took place in 1928, but a number of locos were re-gauged earlier in anticipation. The adjoining Bolivia Railway had always been metre gauge.

The 1929 renumbering

The following list appears as the frontispiece of Livesey & Sons' London office commissioning register, now in the archives of the IMechE as their file LIV/2/2/2.

<u>BOLIVIAN SECTION</u>			<u>BOLIVIA RLY CO</u>	
<u>OLD</u>	<u>NEW</u>		<u>OLD</u>	<u>NEW</u>
301	301	<i>IMS 292</i> <i>This list copied from Co. letter dated 24-12-36 on loco file</i>	1	401
302	302		2	402
351	303		3	403
33	333		4	404
34	334		5	405
35	335		6	406
36	336		7	407
37 (New Loco)	337		8	408
38	338		601	409
57	357		602	410
58	358		101	411
59	359		102	412
60	360		51	451
61	361		52	452
62	362		53	453
63	363		54	454
64	364		55	455
65	365		56	456
181	366			
182	367			
G.1 New	390			
G.2 Garratt	391			
G.3 - do -	392			

Antofagasta Locos have been renumbered as follows:- See letter from Co 10.9.29 on loco file

Chilian Section	1-300
Bolivian "	301-400
Bolivia Railways	401-500
Aguas Blancas Railway	501-600

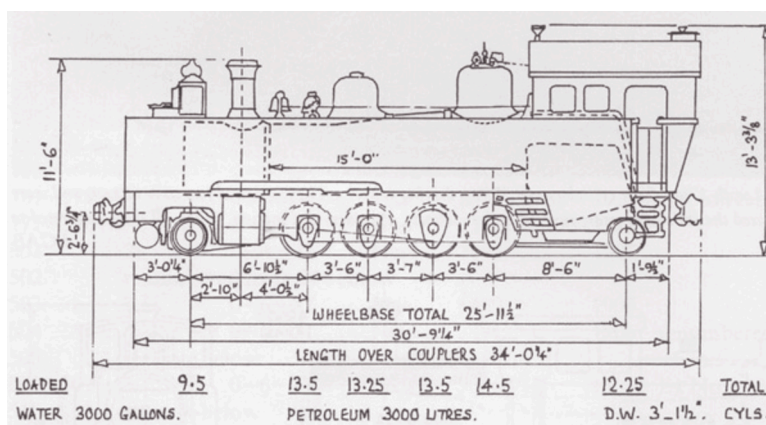
1929
numbers

1 class converted

2-8-2T, converted from 2-8-2 in 1922, d/w 37½", cyls. 17"x22", built by Hawthorn Leslie in 1912

Ex 2' 6" gauge.

1 w/n 2950 ex 168



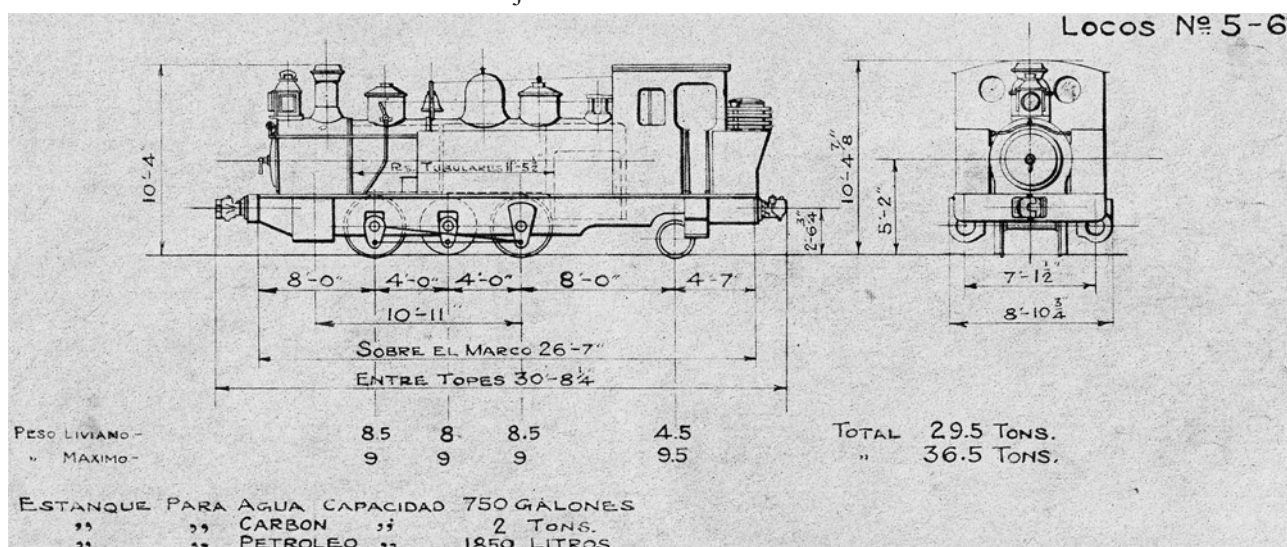
From railway's diagram book, via Turner & Ellis's FCAB book. No. **1** ex **168**.

5/6 class converted

0-6-2T d/w 36", cyls. 15½"x20", built by Hudswell Clarke in 1906

Ex 2' 6" gauge.

- | | | |
|----------|---------|--|
| 5 | w/n 782 | Previously no. 55 . Oil-burning from 1921. Sold to <i>Soc. Fabrica de Cemento El Melón</i> in March 1938. |
| 6 | w/n 783 | Previously no. 56 . Oil-burning from 1921. Last rebuilt in 1954. Latterly works shunter at Mejillones. |

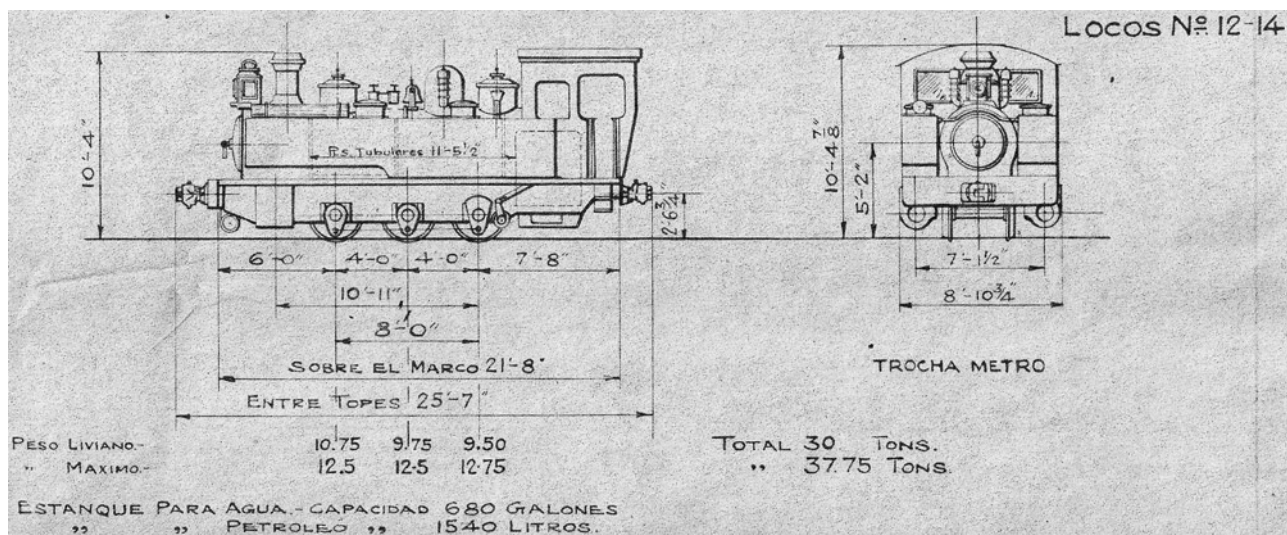


12/26 class converted

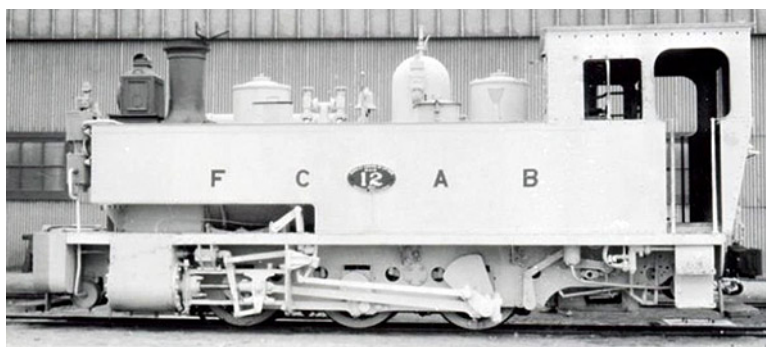
0-6-4T d/w ?, cyls. ?, built by Hunslet in 1905 (12-14), 1906 (15 and 20), and 1907 (21-26)

A number of these were rebuilt as 0-6-2Ts, not merely those known about and listed below. Ex 2' 6" gauge.

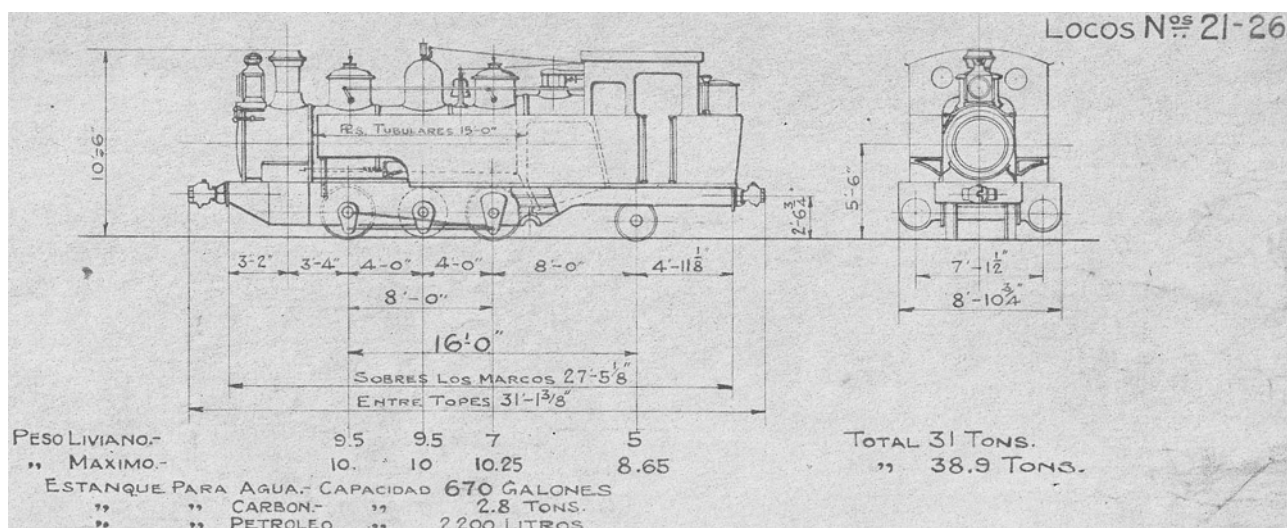
- | | | |
|-----------|---------|---|
| 12 | w/n 878 | Rebuilt as 0-6-0T. |
| 13 | w/n 879 | Rebuilt as 0-6-0T. |
| 14 | w/n 880 | Rebuilt as 0-6-0T. |
| 15 | w/n 907 | |
| 20 | w/n 912 | |
| 21 | w/n 945 | Rebuilt as 0-6-2T. Sold to contractor in Arica 1962 and extant 1990 [16 & ?] and 1993 [20]. |
| 22 | w/n 946 | Rebuilt as 0-6-2T. |
| 23 | w/n 947 | Rebuilt as 0-6-2T. |
| 24 | w/n 948 | Rebuilt as 0-6-2T. |
| 25 | w/n 949 | Rebuilt as 0-6-2T. Sold to contractor in Arica 1962 and extant 1990 [16 & ?] and 1993 [20]. |



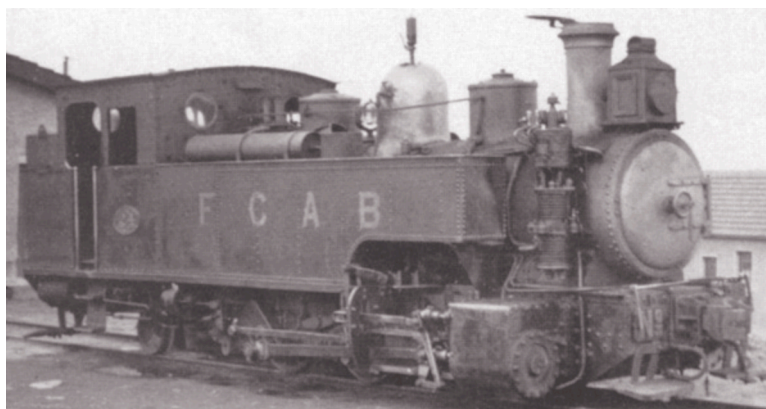
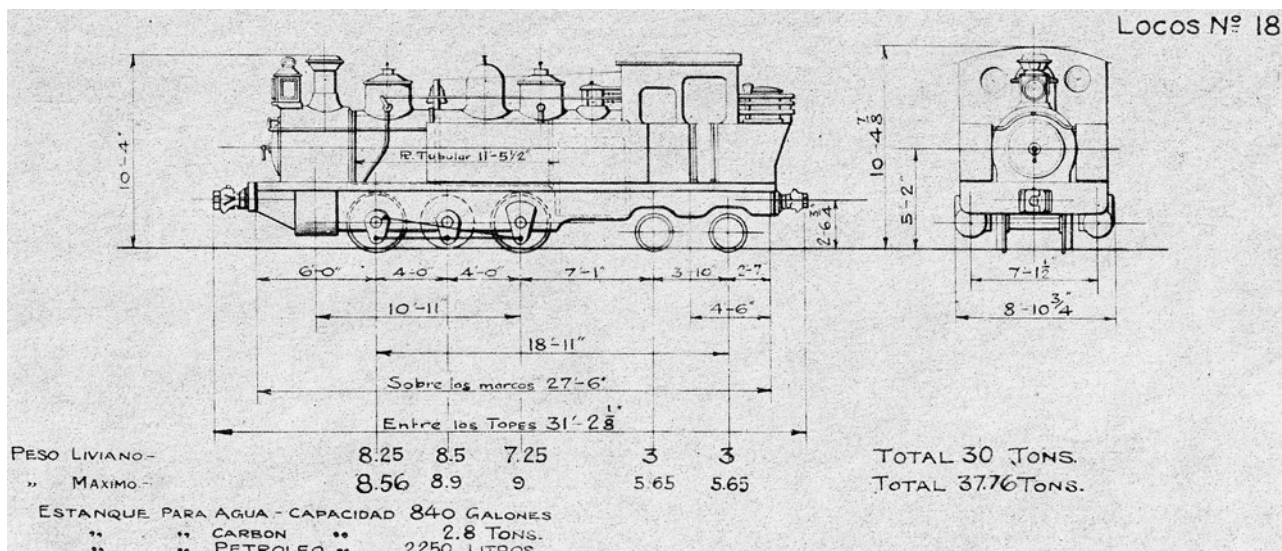
Nos. 12-14 were rebuilt as 0-6-0Ts, seemingly with a different boiler and with the cab and tanks extending out to the greater width permitted by the metre gauge.



No. 12, in photographic grey livery presumably immediately after its rebuild.



On the other hand, those locos which ended up as 0-6-2Ts retained their original boiler design and the cab and tanks were not moved outward.



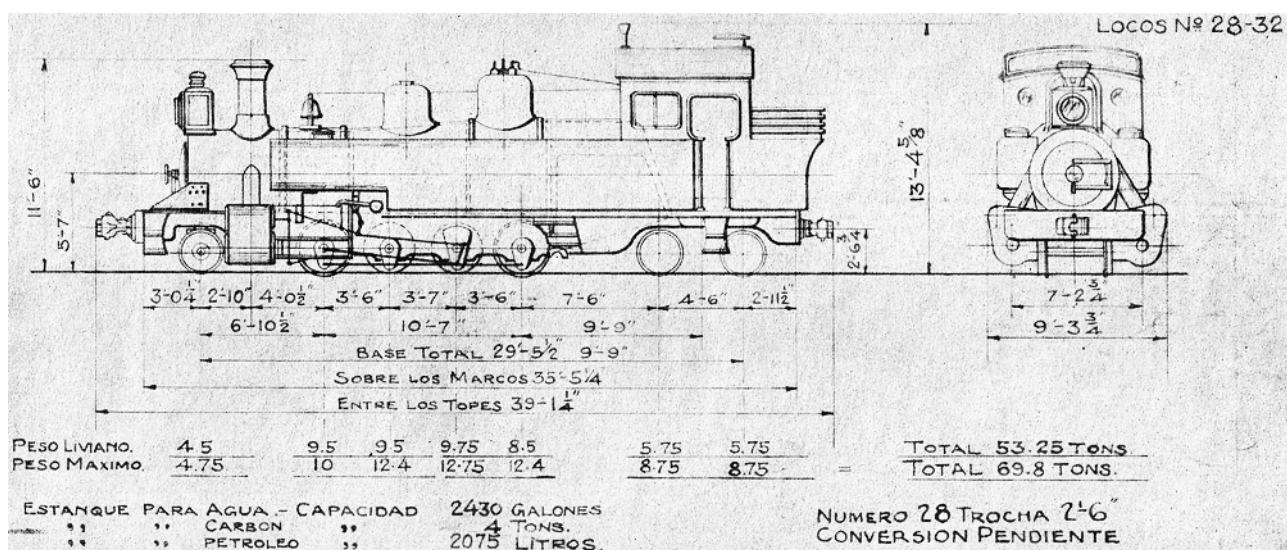
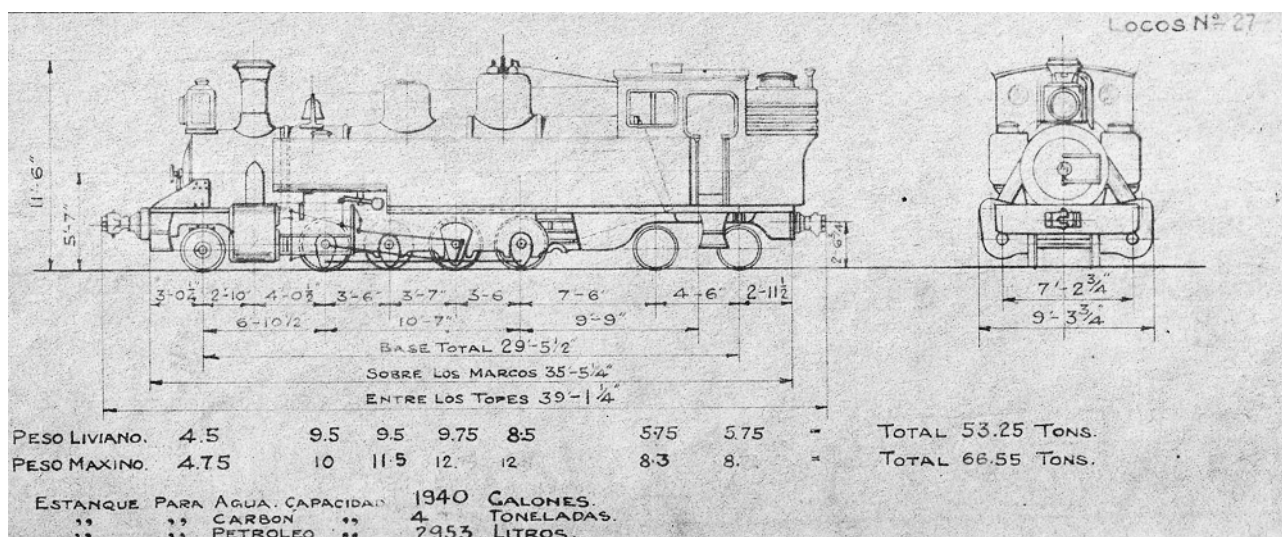
D. Ibbotson pic 1956, via Turner & Ellis's FCAB book.

27/32 class converted

2-8-4T, d/w ?, cyls. ?, built by Kitson in 1911

Ex 2' 6" gauge.

27	w/n 4843	Oil tank placed in bunker, unlike remainder of class. Became <i>ENFFCC/ENFE</i> no. 553 when Bolivian section nationalised in 1962.
28	w/n 4844	Last one of this class to be re-gauged. Became <i>ENFFCC/ENFE</i> no. 554 when Bolivian section nationalised in 1962.
29	w/n 4845	Sold to <i>FC Taltal</i> .
30	w/n 4846	Sold to <i>FC Taltal</i> .
31	w/n 4847	
32	w/n 4848	Eventually renumbered 42 [14] to clear this series.



33/52 class

2-8-4T d/w 44", cyls. 19x24", built by North British in 1927

NBL order no. L830 dated 6th October 1926. FCAB indent no. 778, fitted with M&L type superheater, and oil burning fittings. Some parts duplicated with order L808. Delivery to be 10th April, 10th May 1927. Supposedly designed by Hilary Hood and E.D. Gerrard in Mejillones.

33 w/n 23562

34 w/n 23563

Fitted with modified firebox 1962. Still in stock in 1978 and worked until 1980 or '81 [37] at Calamá, but by 1987 on display at Antofagasta station. Currently in working order and runs attached to a tender from a VF 4-8-2.

35 w/n 23564

Still in stock 1978, but scrapped Mejillones 1981-2 [16].

36 w/n 23565

Still in stock 1978, probably up at Calamá, but earmarked for preservation 1981[16]. This is almost certainly the loco on static display outside the FCAB offices in Antofagasta, but bearing the made-up number plates 209.

ITN states that it was at Mejillones in 1981 when the shops there closed down, and was purchased by the then General Manager, Sr. Gonzalo Menendez Duque.

37 w/n 23566

38 w/n 23567

39 w/n 23568

40 w/n 23569

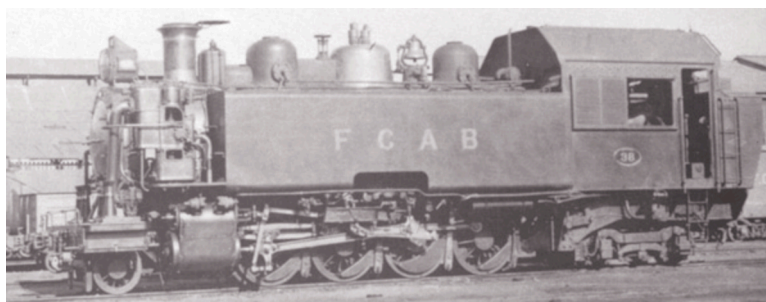
41 w/n 23570

42 w/n 23571

Seen in steam around 1960 [20].

43	w/n 23572	
44	w/n 23573	
45	w/n 23574	Fitted with a Giesl ejector in 1961-2 [37]. Still in use on shunting and trip working at Calama in 1978, but scrapped Mejillones 1981-2 [16].
46	w/n 23575	
47	w/n 23576	Still in stock 1978, but scrapped Mejillones 1981-2 [16].
48	w/n 23577	
49	w/n 23578	
50	w/n 23579	
51	w/n 23580	
52	w/n 23581	

Two still at Mejillones in 1978, plus one stored there; one still at Calama, plus one stored there [16].



Brian Fawcett pic, via Turner & Ellis's *FCAB* book.

Conversion to coal-burning

Ian Thomson Newman, in *Locomotives International* issue no. 55, explains how the *FCAB*, faced with government taxes on imported oil, converted a number of the above NBL 2-8-4Ts to burn coal between 1934 and the early 1940s. He points out with the aid of a photo the difficulty of loading coal into the erstwhile oil tank built into the cab roof!

84 class converted

2-6-0STT d/w 42", cyls. 15"x18", built by Baldwin in 1889

Regauged to 1m in 1917.

84	w/n 9859	Ex no. 34	Withdrawn by 1925.
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139/140 class converted

2-8-0 d/w ? cyls. ?, built by Hudswell Clarke in 1907

Ex 2' 6" gauge.

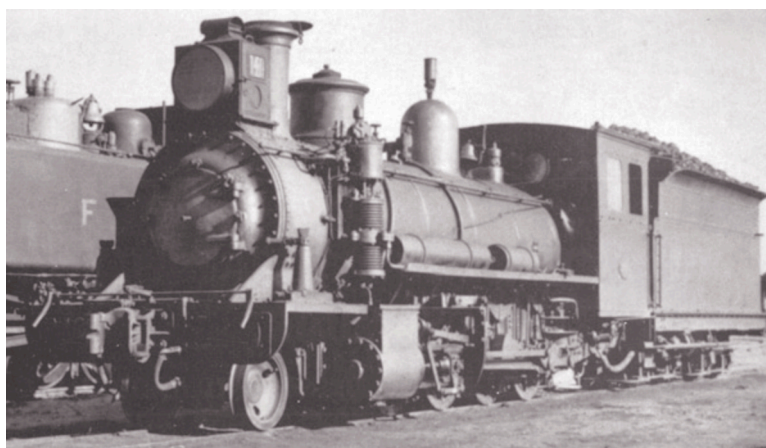
136

137

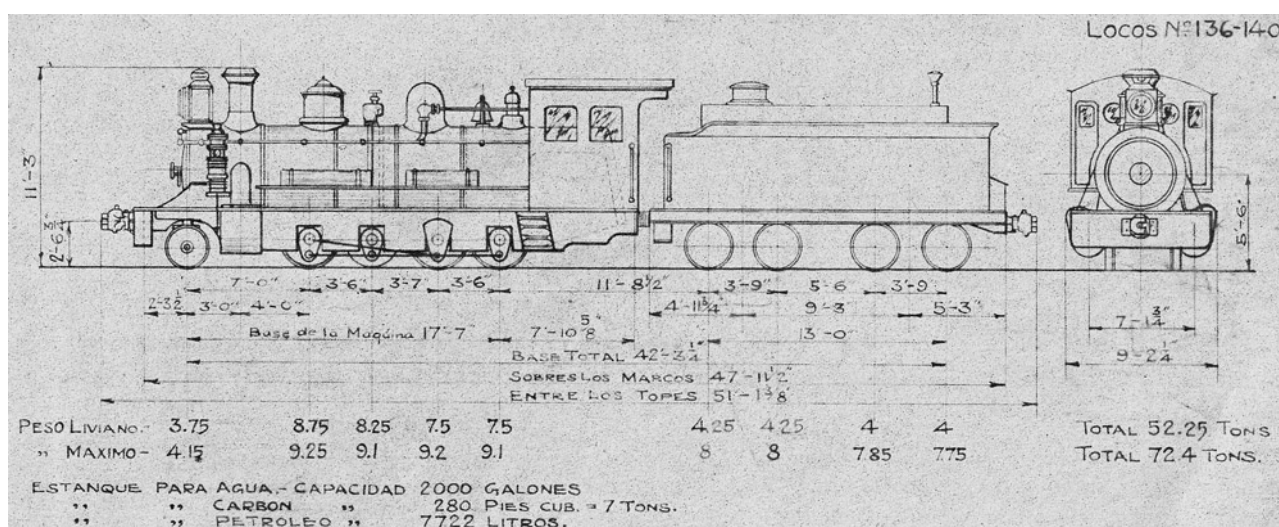
138

139	w/n 787	Oil-burning from 1919. Last general rebuild 1951. Scrapped in (by?) 1960.
-----	---------	---

140	w/n 788	Oil-burning from 1923. Last general rebuild 1949. Stored in 1960.
-----	---------	---



Brian Fawcett pic, via Turner & Ellis's FCAB book.

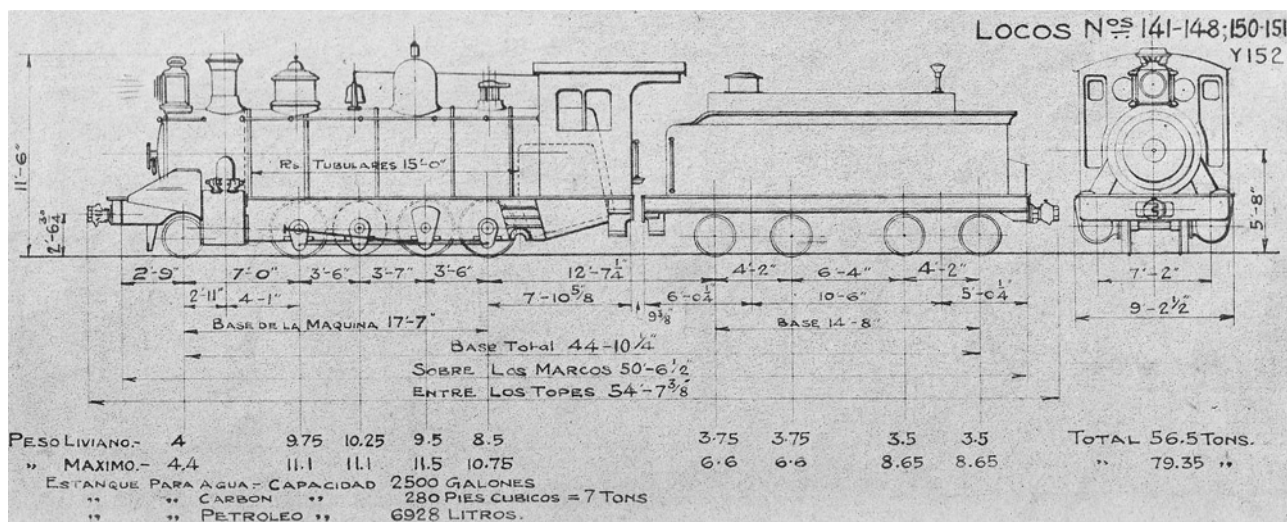


141/152 class converted

2-8-0 d/w ?, cyls. ?, built by Hunslet in 1908 (141-150), and 1911 (151-152)

Ex 2' 6" gauge. Some (including definitely no. **145**) or all were rebuilt with piston valves at some stage.

141	w/n 958	
142	w/n 959	
143	w/n 960	Scrapped Mejillones works in 1962 [38].
144	w/n 961	
145	w/n 962	In steam at Oruro 1956 [David Ibbotson, see pic below]. Scrapped Mejillones works in 1962 [38].
146	w/n 963	Scrapped Mejillones works in 1962 [38].
147	w/n 964	
148	w/n 965	
150	w/n 967	
151	w/n 1066	
152	w/n 1067	



David Ibbotson pic 1956, via Turner & Ellis's FCAB book, loco no.

145. The piston valve cylinders seen here must have been a later improvement, as these engines were originally built with slide valves. The compound air pump is also a replacement for the earlier simple pump.

153/160 class converted

2-8-0 d/w ?, cyls. ?, built by North British in 1911

Ex 2' 6" gauge. Rebuilt with piston valves at some stage.

153 w/n 19428

154 w/n 19429

155 w/n 19430

Scrapped Mejillones works in 1962 [38].

156 w/n 19431

157 w/n 19432

Sold to *FC Taltal*

158 w/n 19433

159 w/n 19434

160 w/n 19435

In steam at Oruro 1956 [David Ibbotson, see pic below]. Scrapped Mejillones works in 1962 [38].



D. Ibbotson pic 1956, via Turner & Ellis's FCAB book.

161/180 class 'converted'

2-8-2 d/w 37½", cyls. 17"x22", built by Hawthorn Leslie in 1912

Ex 2' 6" gauge. 168 was converted to 2-8-2T no. 1.

161 w/n 2943

162 w/n 2944

163 w/n 2945

164 w/n 2946

165 w/n 2947

Scrapped Mejillones works in 1962 [38].

166 w/n 2948

167 w/n 2949

169 w/n 2951

170 w/n 2952

This was also a late loco to be regauged, possibly just before no. 180.

2-8-2 d/w 950mm, cyls. 432x559mm, built by Henschel in 1913

Ex 2' 6" gauge.

171 w/n 11891

172 w/n 11892

173 w/n 11893

Scrapped Mejillones works in 1962 [38].

174 w/n 11894

175 w/n 11895

176 w/n 11896

177 w/n 11897

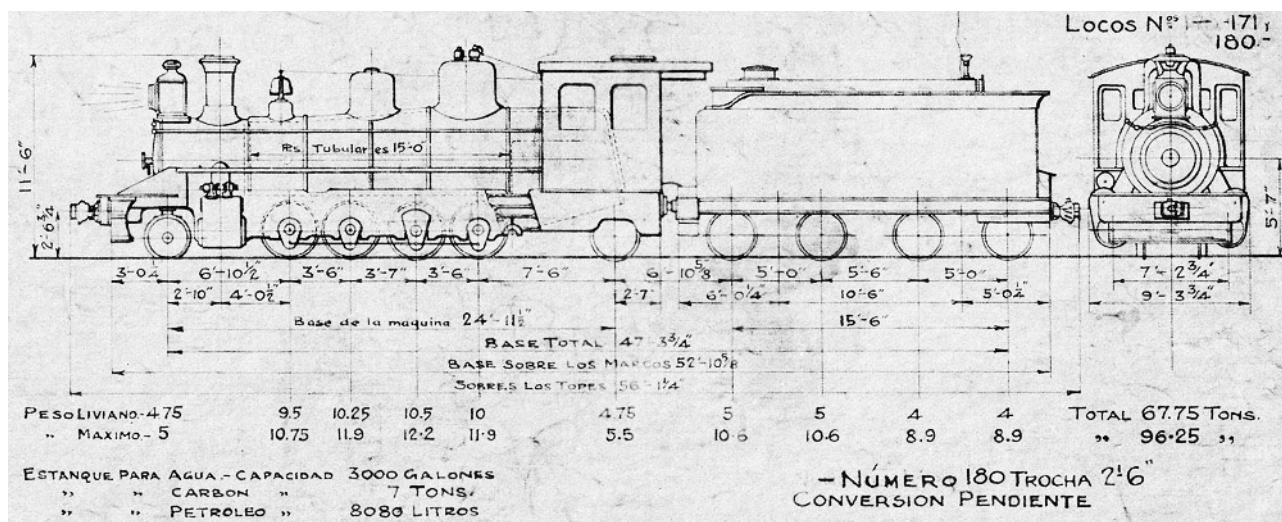
178 w/n 11898

179 w/n 11899

Scrapped Mejillones works in 1962 [38].

180 w/n 11900

This was the last of these locos to be re-gauged, see note on diagram below.



Thoughts of Mallets

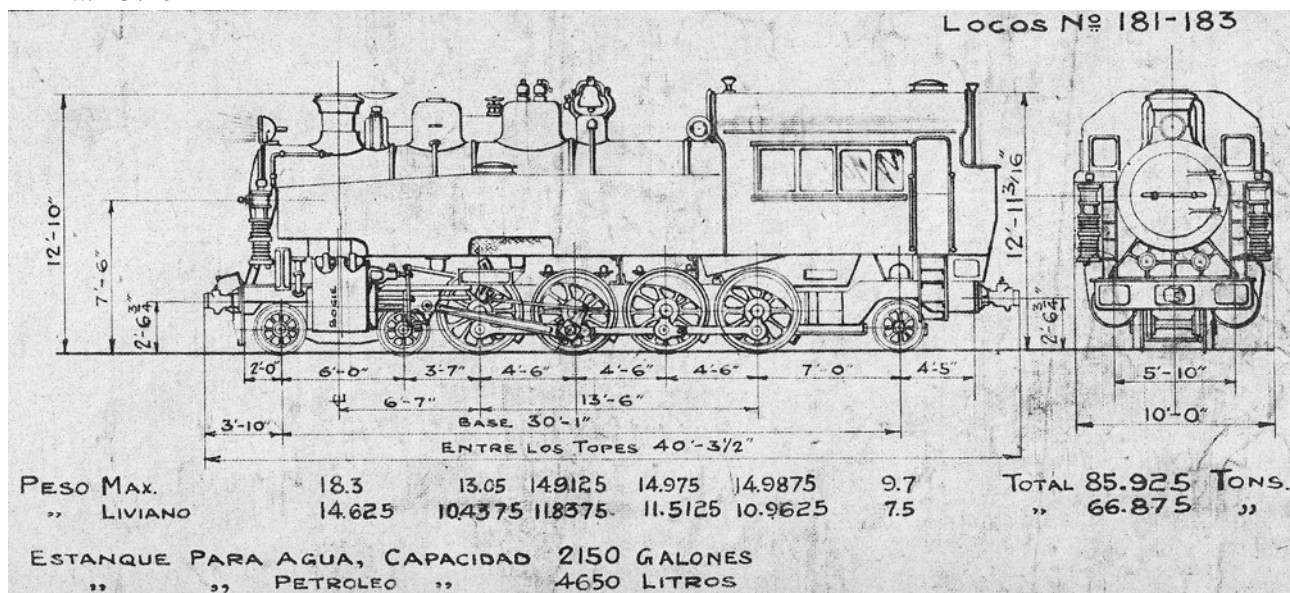
NBL records suggest that they discussed a possible order for metre gauge 0-6-6-0 Mallet locos for the *FCAB* around 1911, with the wheel arrangement changing by mid-1915 to 2-6-6-2 and then to 2-6-6-0. It would seem that no order was ever placed.

Locos beyond this point, apart from nos. **301**, **302** and **351**, were built new to the metre gauge even if constructed before the 1928 gauge change.

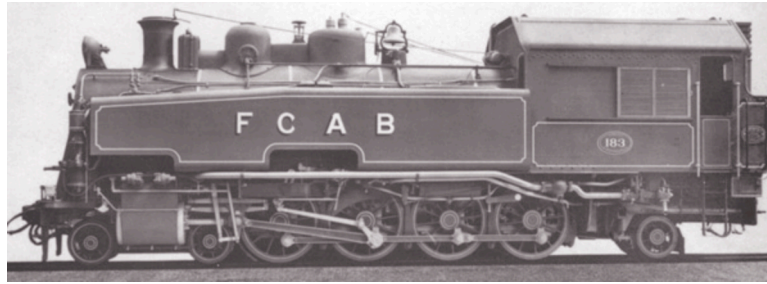
181/183 class

4-8-2T d/w 51", cyls. 21"x24", built by Hawthorn Leslie in 1929

- 181 w/n 3747
- 182 w/n 3748
- 183 w/n 3749



From railway's diagram book blueprint, *FCAB* nos. **181-183**.



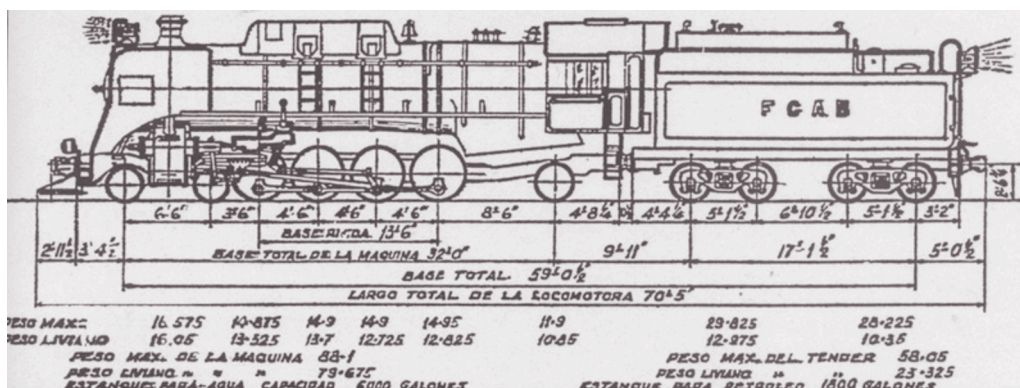
HL builder's pic, S. Swift coll., via Turner & Ellis's book.

201/206 class in Chile, 341/350 class in Bolivia
4-8-2 d/w 48", cyls. 19x26", built by Vulcan Foundry in 1954

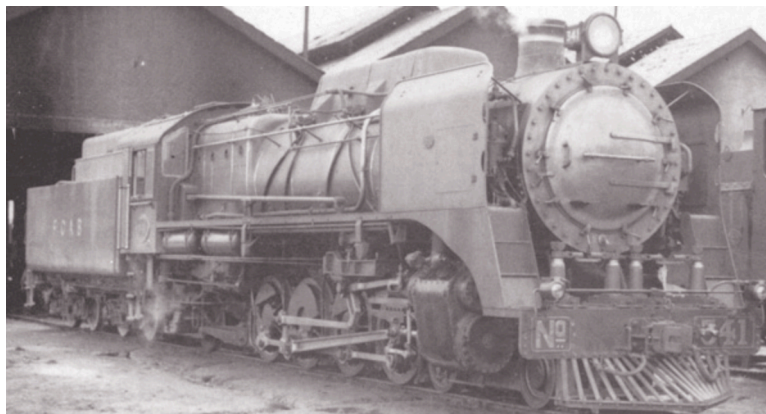
Originally intended to be six for Chile and ten for Bolivia, hence the running numbers. [38] tells that the new CME in 1952, Mr. P. Dawes, wanted to order 4-10-4Ts but was over-ruled.

201	w/n 6170	Still in fleet at Mejillones in 1978, but scrapped 1981-2 [16].
202	w/n 6171	Became <i>ENFFCC / ENFE</i> no. 821 . Survives at Oruro loco shed.
203	w/n 6172	
204	w/n 6173	Still in fleet at in 1978, but scrapped 1981-2 [16].
205	w/n 6174	Still in fleet at in 1978, at Calamá, but scrapped 1981-2 [16].
206	w/n 6175	Became <i>ENFFCC / ENFE</i> no. 822 Transferred to <i>ENFE</i> Eastern Division.
341	w/n 6176	Became <i>ENFFCC / ENFE</i> no. 811 . Stored at Cochabamba in 1994.
342	w/n 6177	Became <i>ENFFCC / ENFE</i> no. 812
343	w/n 6178	Became <i>ENFFCC / ENFE</i> no. 813 . Dumped at Santa Cruz in 1995.
344	w/n 6179	Became <i>ENFFCC / ENFE</i> no. 814 . Dumped at Oruro in 1994. Survives at Oruro loco shed.
345	w/n 6180	Became <i>ENFFCC / ENFE</i> no. 815
346	w/n 6181	Became <i>ENFFCC / ENFE</i> no. 816
347	w/n 6166	Became <i>ENFFCC / ENFE</i> no. 817 . Survives at Uyuni loco shed.
348	w/n 6167	Became <i>ENFFCC / ENFE</i> no. 818 . Stored at Cochabamba in 1994.
349	w/n 6169	Became <i>ENFFCC / ENFE</i> no. 819 . Survives at Uyuni loco shed.
350	w/n 6168	Became <i>ENFFCC / ENFE</i> no. 820 . Stored at Cochabamba in 1994.

Two still stored at Calama in 1978 [16].



From railway's diagram book blueprint, via Turner & Ellis's
FCAB book. FCB nos. **201-206**.



D. Ibbotson pic 1955, via Turner & Ellis's FCAB book.



Martin Coombs' pic, at Uyuni in 1975.

301/302 class converted

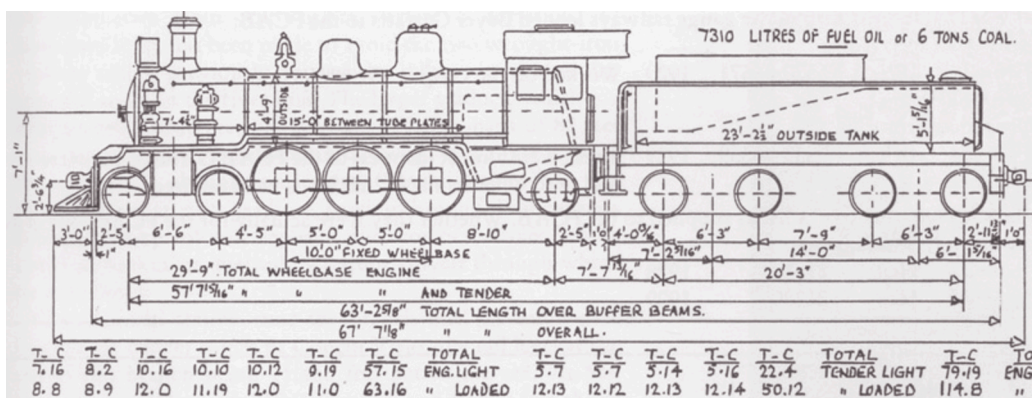
2-6-0 d/w 42", cyls. 15x18" (but 302 may have had 15x20"), built by Baldwin in 1891

301	w/n	Originally no. 49 'CHOROLQUE', later no. 84, Rebuilt to metre gauge Uyuni in 1917 [FCB diagram book 1918].
302	w/n	Originally no. 34 'RÍO GRANDE', later 84, Rebuilt Uyuni in 1919 [FCB diagram book 1918]. NB diagram definitely says rebuilt 1919, despite front page of book being dated 1918.

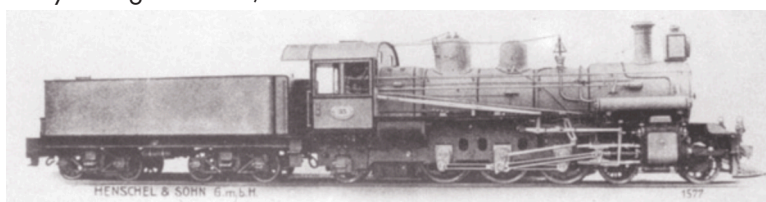
333/338 class

4-6-2 d/w 58½", cyls. 19x24", built by Henschel in 1914 (333-336) and 1928 (337-338)

333	w/n 12748	Originally no. 33. Later became ENFFCC / ENFE no. 756. In steam at Oruro 1956 [David Ibbotson, Rest. & arch. Trust pic cjwsam295]. Hulk survives at Uyuni dump.
334	w/n 12749	Originally no. 34. Later became ENFFCC / ENFE no. 751 Hulk survives at Uyuni dump.
335	w/n 12750	Originally no. 35. Later became ENFFCC / ENFE no. 752
336	w/n 12751	Originally no. 36. Later became ENFFCC / ENFE no. 753
337	w/n 21213	Originally no. 37. Later became ENFFCC / ENFE no. 754
338	w/n 21214	Originally no. 38. Later became ENFFCC / ENFE no. 755. Survives at Uyuni loco shed.



From railway's diagram book, via Turner & Ellis's FCAB book. FCAB nos. **333-338**.



Henschel catalogue pic.

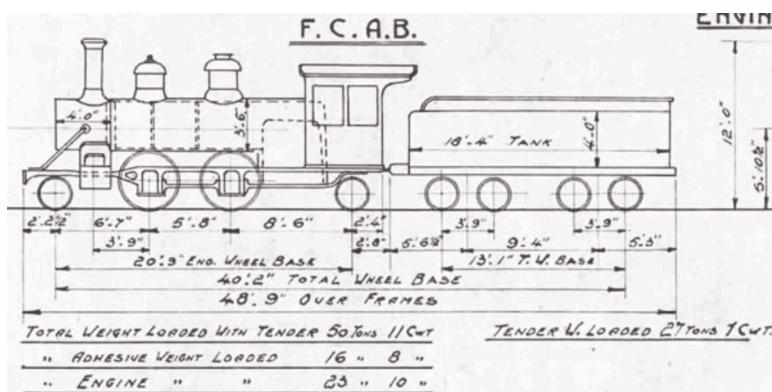
351 class

2-4-2 d/w ?, cyls. ?, built by Baldwin in 1886

Ex 2' 6" gauge.

351 w/n 8215

Originally Cia. de Huanchaca no. **20**, was *FCAB* no. **33** from 1909 to 1914. Photo from Chris Walker collection shows it in use at Uyuni in 1930s. [R&AT website ref cjwsam335]. However the 1918 *FCB* diagram book says it was originally *FCAB* no. **34** rebuilt at Maestranza Uyuni in 1918.



From FCB 1918 diagram book blueprint.

357/367 class

2-8-0 d/w 44", cyls. 20"x24", built by Henschel in 1914 (357-360) and 1921 (361-367)

Locos from 361 onward had cyls. 20½"x24" and a larger boiler and longer firebox, also a longer tender. They weighed 119T 16cwt in working order, as compared to 100T 14cwt for the earlier locos.

357 w/n 12544

Originally no. **57**. Later became *ENFFCC* / *ENFE* no. **614** Seen at Cochabamba in 1970 {DTR pic on R&AT website, ref. trbo70050}.

358 w/n 12545

Originally no. **58**. Later became *ENFFCC* / *ENFE* no. **615**

359 w/n 12546

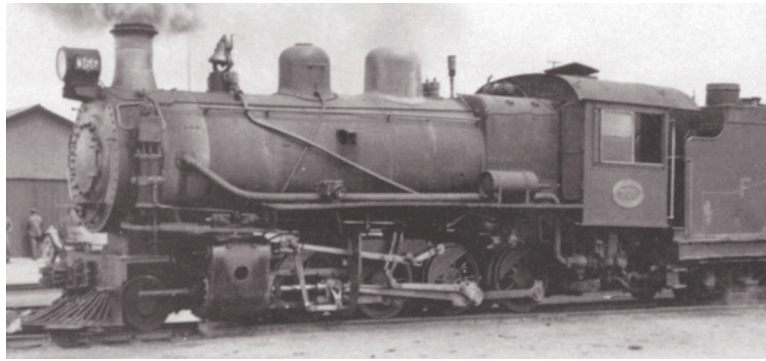
Originally no. **59**. Later became *ENFFCC* / *ENFE* no. **616**

360 w/n 12547

Originally no. **60**. Later became *ENFFCC* / *ENFE* no. **617** Seen at Cochabamba in 1970 {DTR pic on R&AT website, ref. trbo70050}.

361 w/n 18305

Originally no. **61**.

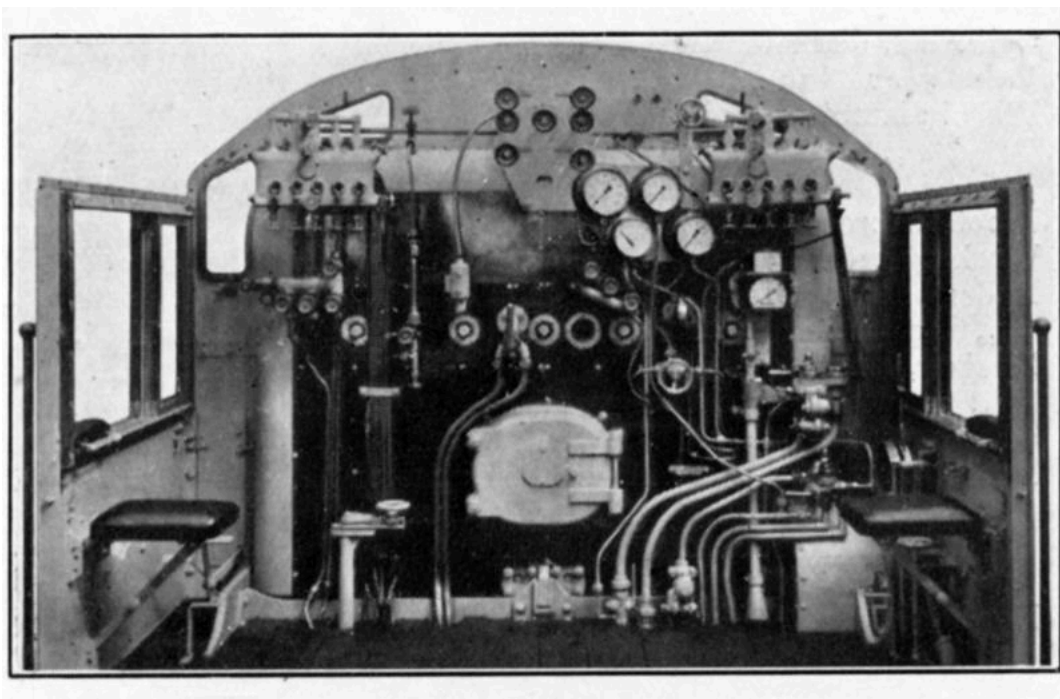
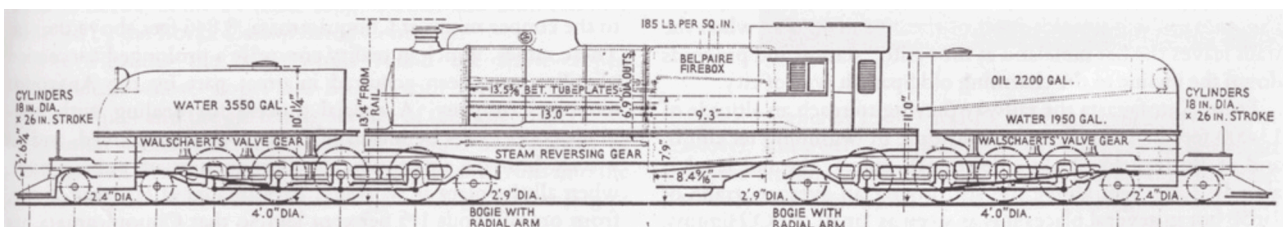


390/398 class

4-8-2+2-8-4T d/w 48", cyls. 18"x26", built by Beyer, Peacock in 1928 (390-392) and 1950 (393-398)

First batch of three had rectangular front tank. Second batch of six had streamlined front tank.

390	w/n 6524	Originally no. G1 . Later became <i>ENFFCC / ENFE</i> no. 909 Hulk survives at Uyuni dump.
391	w/n 6525	Originally no. G2 . Later became <i>ENFFCC / ENFE</i> no. 901 . Survives at Uyuni loco shed.
392	w/n 6526	Originally no. G3 . Later became <i>ENFFCC / ENFE</i> no. 902
393	w/n 7420	Later became <i>ENFFCC / ENFE</i> no. 903 . Survives at Uyuni loco shed.
394	w/n 7421	Later became <i>ENFFCC / ENFE</i> no. 904 Hulk survives at Uyuni dump.
395	w/n 7422	Later became <i>ENFFCC / ENFE</i> no. 905 . Survives at Uyuni loco shed.
396	w/n 7423	Later became <i>ENFFCC / ENFE</i> no. 906 . Survives at Uyuni loco shed.
397	w/n 7424	Later became <i>ENFFCC / ENFE</i> no. 907 . Survives at Potosi loco shed.
398	w/n 7425	Later became <i>ENFFCC / ENFE</i> no. 908 Hulk survives at Uyuni dump.



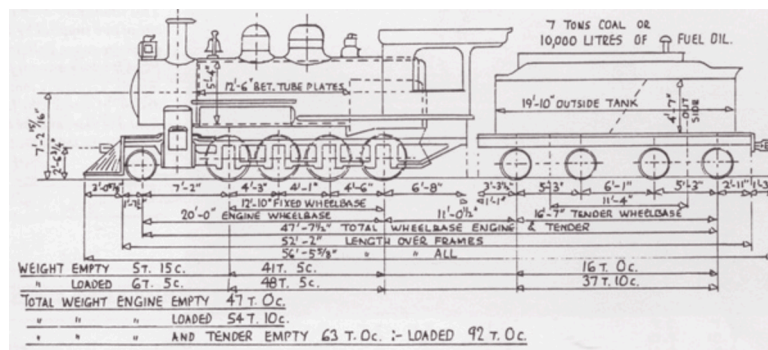
A builders' view of the cab interior of the first batch of Garratts.
The photo was published in the *Railway Gazette* of May 17th 1929.

401/408 class

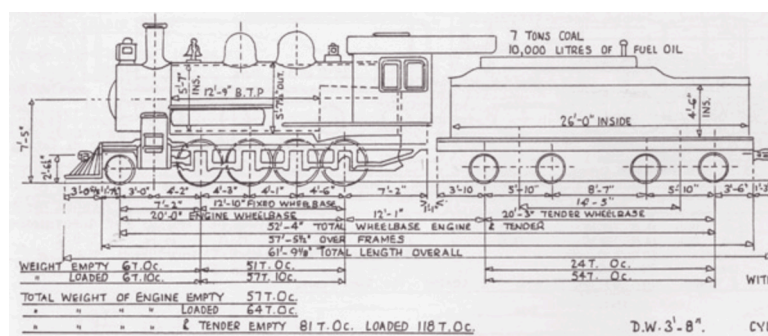
2-8-0 d/w 44", cyls. 18"x24" (401-404) or 19"x24" (405-408), built by ALCo in 1906 (401-414) and 1909 (405-408)

These may originally have been nos. **1-8**. The second batch of four were fitted with piston valves and a superheater, also a longer tender.

401	w/n 41130	Later became <i>ENFFCC / ENFE</i> no. 606 In steam at La Paz 1955 [D Ibbotson pic, Rest. & Arch. Trust image cjwsam294].
402	w/n 41131	Later became <i>ENFFCC / ENFE</i> no. 607
403	w/n 41132	Later became <i>ENFFCC / ENFE</i> no. 608 . In steam at La Paz 1955 [D Ibbotson pic, Rest. & Arch. Trust image cjwsam294]. Hulk survives at Uyuni dump.
404	w/n 41133	Later became <i>ENFFCC / ENFE</i> no. 609 . In steam at La Paz 1960 [D Ibbotson pic, Rest. & Arch. Trust image cjwsam338]. Hulk survives at Uyuni dump.
405	w/n 44424	Later became <i>ENFFCC / ENFE</i> no. 610
406	w/n 44425	Later became <i>ENFFCC / ENFE</i> no. 611
407	w/n 44426	Later became <i>ENFFCC / ENFE</i> no. 612
408	w/n 44427	Later became <i>ENFFCC / ENFE</i> no. 613



From railway's diagram book, via Turner & Ellis's *FCAB* book. *FCB* nos. **401-404**.



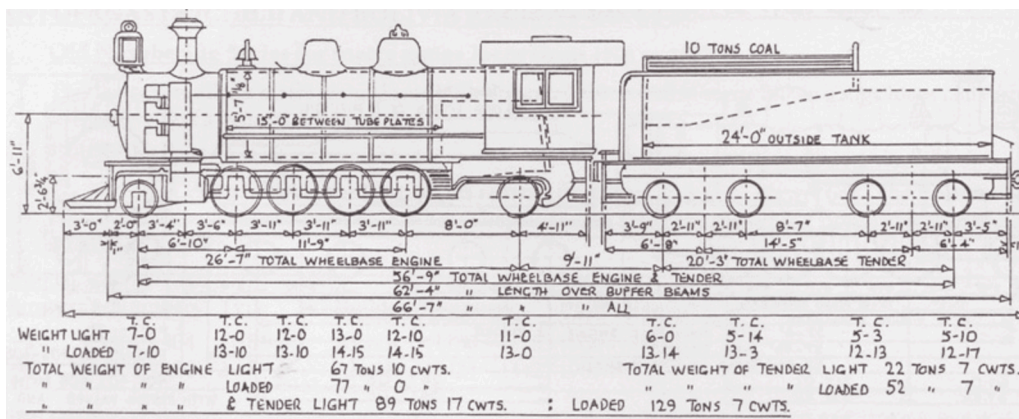
From railway's diagram book, via Turner & Ellis's *FCAB* book. *FCB* nos. **405-408** with piston valves and superheater.

409/410 class

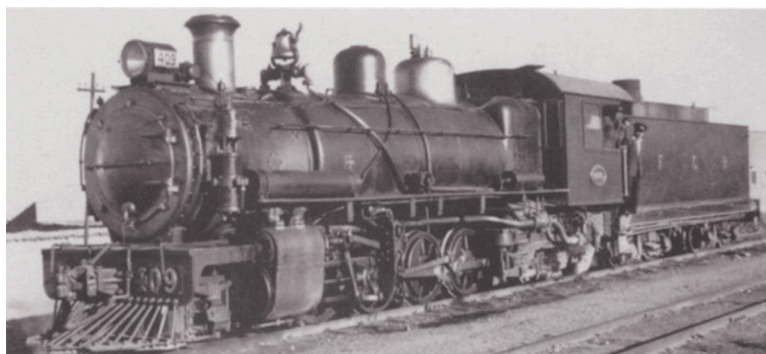
2-8-2 d/w 44", cyls. 19"x24", built by Kitson in 1912

Rebuilt 1939 with piston valve cyls. 21"x24". Later became *FCB* nos. **601-602**.

409	w/n 4860	Hulk survives at Uyuni dump.
410	w/n 4861	Hulk survives at Uyuni dump.



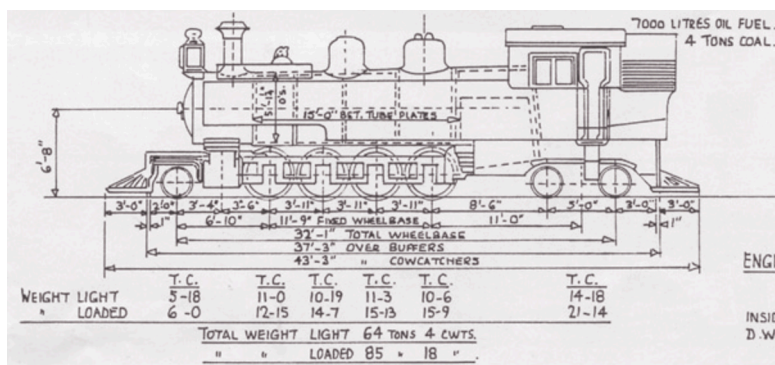
From railway's diagram book, via Turner & Ellis's FCAB book. FCAB nos. **409-410**.



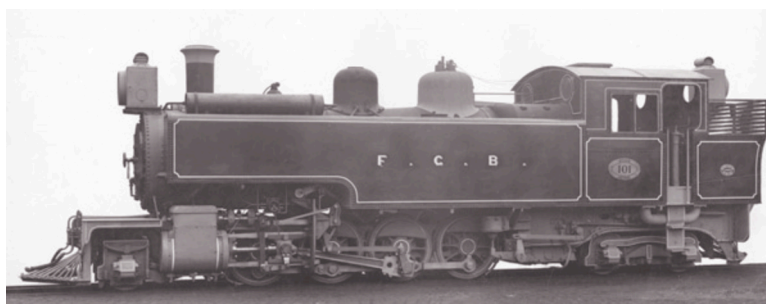
411/412 class

2-8-4T d/w 44", cyls. 18"x24", built by Hunslet in 1912

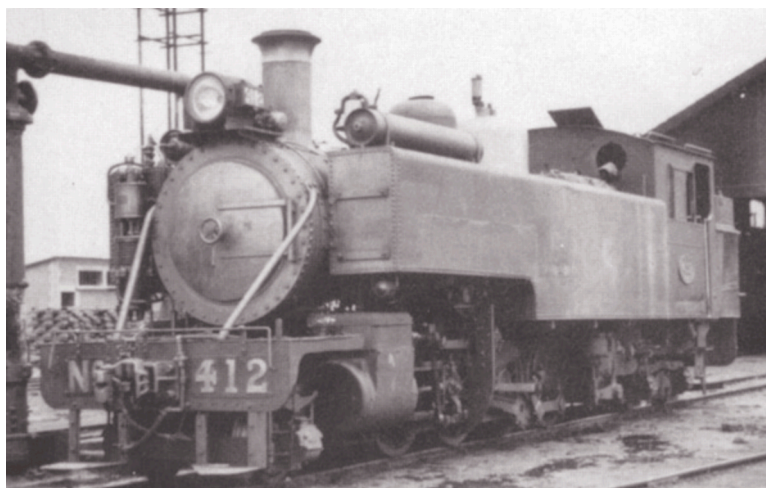
- 411** w/n 1102 Originally FCAB no. **101** but displayed 'FCB 101' on builder's photo. Later became ENFFCC / ENFE no. **551**. Survives at Uyuni loco shed.
- 412** w/n 1102? Originally FCAB no. **102**. Later became ENFFCC / ENFE no. **552**. Survives plinthed in Uyuni town.



From railway's diagram book, via Turner & Ellis's FCAB book. FCAB nos. **411-412 ex 101-102**.



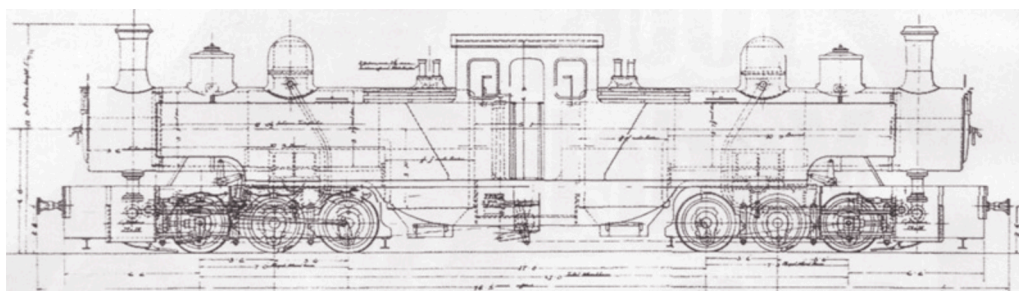
Hunslet builder's photo.



Later photo. Note added stays to buffer beam.

A proposal for twin boiler Fairlies

Ian Thomson, in his article on Bolivian and Chilean locos proposed but not built in *Locomotives International* issue 111 [], reports that the diagram below was found at Mejillones workshops. The drawing was by Hunslet and dated 1913 and he suggests that they had, surprisingly, initiated this idea. I think it much more likely that the idea had come from the *FCAB* and been circulated to interested loco builders.



Interestingly, this concept is shown with steampipes to each bogie leading down from the appropriate dome to the bogie pivot before running out to the bogie ends. This was the singularly unsuccessful layout that Hunslet used for the single Fairlie 'GOWRIE' that they built for the North Wales Narrow Gauge Railways in 1908, and can be contrasted with the more usual pattern of flexible steam pipes running down from each smokebox.

451/456 class

0-6-2+0-6-2TT Meyers d/w 44", cyls 18"x20", built by Beyer, Peacock in 1913

NBL records suggest that they too had tendered for the construction of these Livesey Son & Henderson designed locos.

451	w/n 5617	Originally no. 51 . Hulk survives at Uyuni dump.
452	w/n 5618	Originally no. 52 . Hulk survives at Uyuni dump.
453	w/n 5619	Originally no. 53 . Part hulk survives at Uyuni dump. Tender also survives at Uyuni dump.
454	w/n 5620	Originally no. 54 . Hulk survives at Uyuni dump. Tender survives at Uyuni loco shed.
455	w/n 5621	Originally no. 55 . In steam at La Paz 1955 [D Ibbotson pic, Rest. & Arch. Trust image cjwsam304]. Hulk survives at Uyuni dump.
456	w/n 5622	Originally no. 56 . In steam at Viacha 1955 [D Ibbotson pic, Rest. & Arch. Trust image cjwsam405]. Hulk survives at Uyuni dump.

Shown in order book as Eight (8) Passenger Engines & Tenders fitted with Robinson superheaters. 4-6-2+8 type cyls. 20"x24", metre gauge. Delivery End of May 1915. This last sentence crossed out and replaced first by 'Deliveries postponed 6 months, 19/8/14' and then overwritten 'Cancelled 13/8/15' "No drawings done". Prior to the placing of the order preparatory drawings had included at least one (S950) for a 4-cylinder compound version of this design.
?
w/n 21064-21071

Other possible orders

The NBL list of drawings prepared speculatively, in reponse to queries from railways or in preparation for tenders to be offered, includes a reference dated 31st March 1914 to a drawing S1029 for the *FCAB* showing a "4-12-0 Type Engine on a curve of 250 ft radius". Perhaps this should have been dated a day later! Alternatively, 4-12-0 has the same number of driving and carrying wheels as the 2-6+2-6 Meyers that were being designed at that time. Probably someone had got very confused.

The *FCAO*

Sr. Mario Giorgetta writes: "(On the subject of the) *FCAO*: find enclosed an extract of an official (annual) of (the) Bolivian Government containing all administrative acts during 1935, a heavy tome of some 2000 pages (only part 2). (Under) the letter F (for *ferrocarriles*)... we find the registered names of rail companies operating in Bolivia in that period.

- | | |
|--|--|
| ▪ <i>Ferrocarril Antofagasta</i> | ▪ <i>Ferrocarril Antofagasta - Oruro</i> |
| ▪ <i>Ferrocarril Arica - La Paz</i> | ▪ <i>Ferrocarril Atocha - Villazón</i> |
| ▪ <i>Ferrocarril Cochabamba - Santa Cruz</i> | ▪ <i>Ferrocarril Guaqui</i> |
| ▪ <i>Ferrocarril Machacamarca - Uncía</i> | ▪ <i>Ferrocarril Potosí - Sucre</i> |
| ▪ <i>Ferrocarril The Bolivia Railway</i> | ▪ <i>Ferrocarril The Bolivia Railway & Antofagasta</i> |
| ▪ <i>Ferrocarril Yungas</i> | |

For comparison the situation eight years before in 1927...

- Arica - La Paz Railway, 125 miles in Chile and 151 miles in Bolivia.
- Antofagasta & Bolivia Railway, 575 miles in Bolivia and 275 miles in Chile.
- Atocha - Villazón Railway, 124 miles.
- *Empresa Luz y Fuerza Electrica de Cochabamba*, 49 miles.
- Guaqui - La Paz Railway, 60 miles.
- Huanchaca de Bolivia Railway, 26 1/2 miles.
- La Paz - Yungas Railway, under construction.
- Machacamarca - Unc.a Railway, 37 miles.
- Potosi - Sucre Railway, under construction.
- Corocoro - Taleira Railway, 5 miles.
- Cochabamba - Santa Cruz railway, schemes proposed.
- Santa Cruz - Yacuiba railway, proposed.
- Santa Cruz - Paraguay River railway, projects .
- Cochabamba - to - El Beni railway, proposed.
- Guayaremerin - Riberalta railway, proposed.
- Iquique - Oruro railway, proposed.
- Juliaca (Peru) - La Paz railway, proposed.

...In 1935 most important for Bolivia were the lines in the east for logistic transport of troops and materiel (F.C. Yungas, FC Cochabamba-Santa Cruz...), (because of) still (being) in war with Paraguay (Guerra del Chaco 1932-1935). It is interesting to find in 1935 such names as The Bolivia Railway, *FC Antofagasta*, *FC The Bolivia Railway & Antofagasta* and finally as well as *FC Antofagasta-Oruro* that weren't present in 1927, while *FCAB* disappeared in the 1935 list. All the four in 1935 may be related by leasing, participation etc. to still existing *FCAB* because of fiscal, legal or political means. In between (June 1927) there was an expropriation of some of these mainly under British capital and management operating companies by the Bolivian government that saw endangered his national security

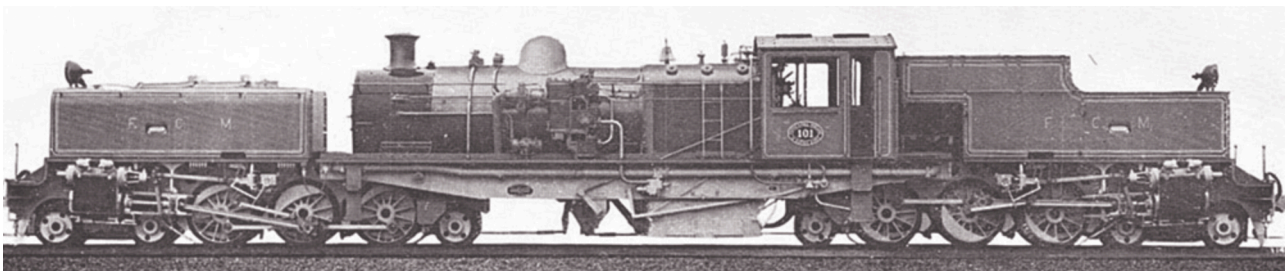
and his sovereignty by foreign dominance of such important sector (ref: *United States Bureau of Foreign and Domestic Commerce, Railways of South America: Volume 3*, Jan. 1930). This was followed by very elaborate legal treaties that regulated the participation of these railway companies under state license, so that the operation, further expansion and maintenance of the railway lines could continue to be guaranteed, because Bolivia itself hardly had the technical and also financial means to manage this. It would take days of work to get an overview of all these state decrees and contracts, which at that time were rewritten or cancelled with every change of government. Even our contemporary history of the *FCAB* is silent about those confusing conditions of those years.”

Borrowed locos, from Argentine railways during WW2:

4-6-2+2-6-4T Garratts d/w 48", cyls. 15½x22", built by Beyer, Peacock in 1929

Owned by Buenos Aires Midland Railway.

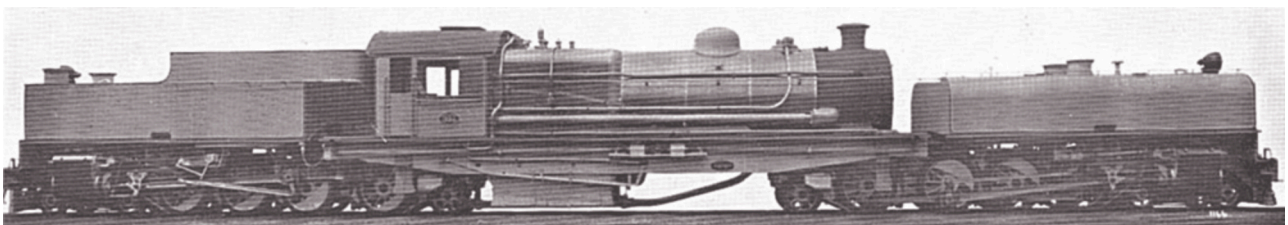
- | | | |
|------------|----------|-------------------------------------|
| 101 | w/n 6570 | Used on Uyuni to Oruro section. |
| 102 | w/n 6571 | Used on Uyuni to Oruro section. ½½½ |



4-8-2+2-8-4T Garratts d/w 48", cyls. 18x26", built by Beyer, Peacock in 1929

Owned by Cordoba Central Railway.

- | | |
|-------------|----------|
| 1511 | w/n 6550 |
| 1512 | w/n 6551 |
| 1513 | w/n 6552 |
| 1514 | w/n 6553 |
| 1515 | w/n 6554 |
| 1516 | w/n 6555 |
| 1517 | w/n 6556 |
| 1518 | w/n 6557 |
| 1519 | w/n 6558 |
| 1520 | w/n 6559 |



Unidentified locos supposedly for the *FCAB*

0-6-2T d/w ?, cyls. ?, built by Henschel in 1928-9

Supposedly for the *FCAB* but possibly for a related subsidiary company or mine.

- | | |
|----------|-----------|
| ? | w/n 21014 |
| ? | w/n 21280 |

3.3.6 *El FC de Potrerillos* – The Andes Copper Mining Company

1000mm gauge, 97 km mainline. Concession granted to William Braden in 1915, but railway not opened until 1928.

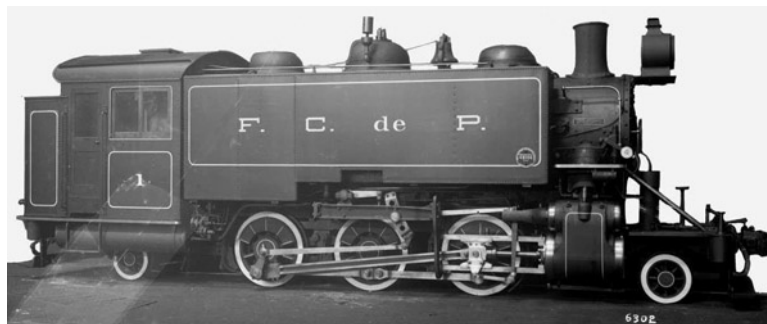
Source [8] from 1920 implies that the motive power was made up solely of Mallet locos running on oil fuel, and with a gross weight of 118 tonnes, axle loading 10 tonnes and TE of 30,000 lbs. Source [9] of 1923, however, suggests that there was just one Mallet (number **102**), one 2-8-0 (number **101**), and one shunter (number **1**) at that date. This is compatible with the info below, if the Mallet **102** was later renumbered **201**. However the Baldwin spec books show that Mallet **201** was delivered bearing that number. It therefore seems more likely that source [9] had merely transposed the numbers to **102**. The 1930 US report also confirms the line had 10 locos by then. [16] says dieselised in 1957 but steam held in reserve until 1977.

2-6-2T d/w 42", cyls. 17"x22", built by Baldwin in 1917 (1) and 1925 (2)

BLW class 10 28 ¼ D no. 60 and ?? Spec. in BLW volume 54 p372, and vol 78 pp302...

1 w/n 45106

2 w/n 58412 Cyls. 17x24". Survives at Potrerillos.



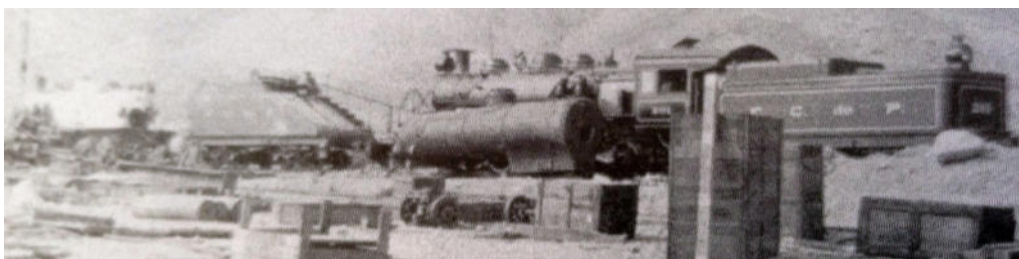
No. **1**, Baldwin 45106.



BLW archive pic; hi-res versions available from Railroad Museum of Pennsylvania.



Although not of good quality, this photo shows a 2-6-2 numbered **1**, having a low cab floor like the above tank locos but not carrying side tanks. Instead it has been equipped with the strange slope-back tender from 2-8-0 no. **101**, see below. The picture was apparently taken in 1964, and probably at Barquito, the port just south of Chañaral.



On the left of this photo is again seen an ex-tank loco with the slope-back tender, either in course of rebuilding or when later being scrapped. On the right, behind a dismantled boiler, is the Mallet no. 201. The photo was received from Sr. Pablo Moraga.



No. 2 as surviving at Potrerillos, from a photo posted on Facebook by Waldo Tuerca.



2-6-2T no. 2 was recently moved on a low loader, presumably to a new plinth somewhere, but the precise location is not yet known.

2-8-2 d/w 44", cyls. 20"x24", built by Baldwin in 1925 (50-2) and 1926 (53)

BLW class 12-34 $\frac{1}{4}$ E nos. 24-28. Note that this class was a later introduction to the railway than were the class 101 Consolidation and the class 201 Mallet locos.

50	w/n 58376	
51	w/n 58377	In service in 1947 [44].
52	w/n 58431	In service in 1947 [44].
53	w/n 59471	In service in 1947 [44].



BLW archive pic; hi-res versions available from Railroad Museum of Pennsylvania.

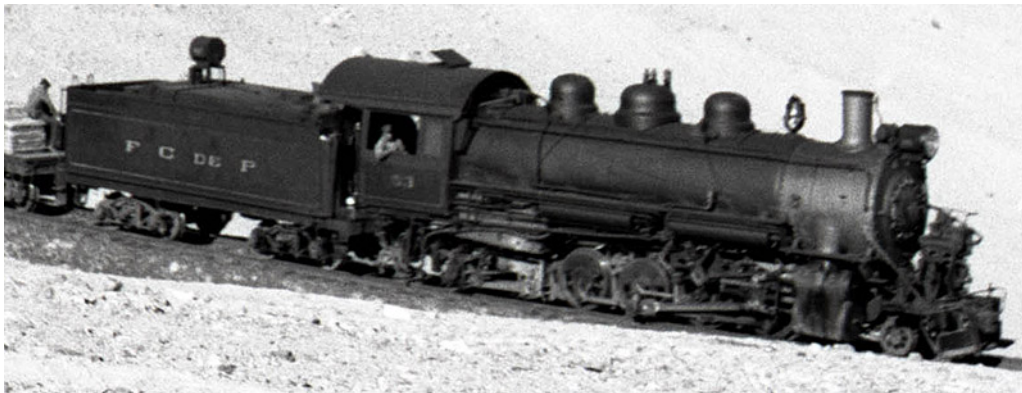
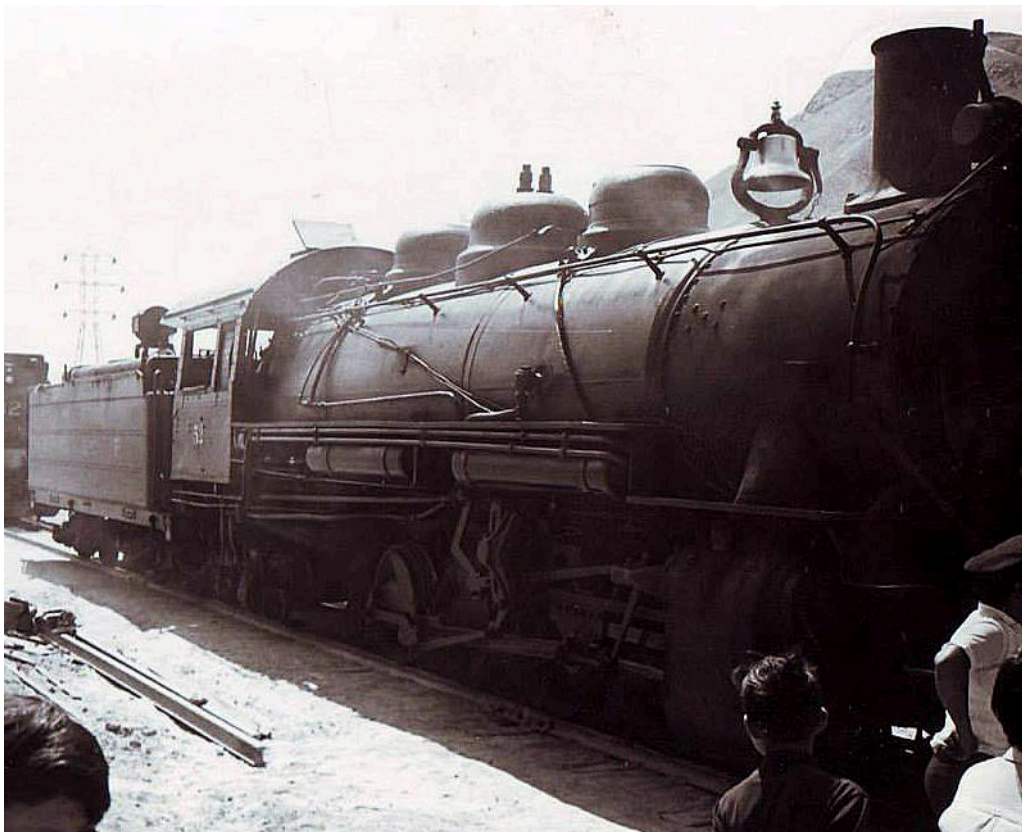
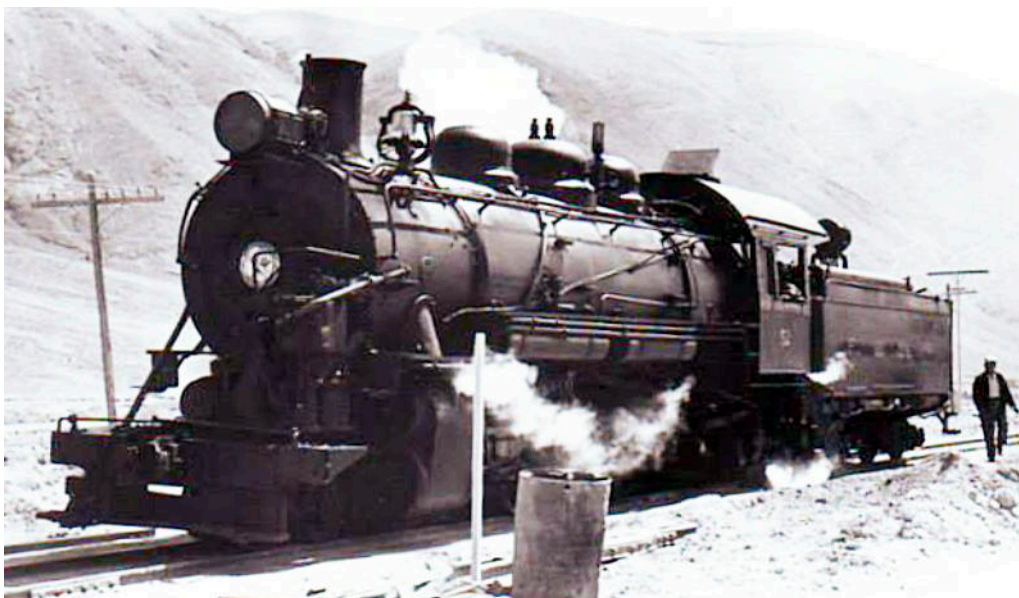


Photo from the Roberto Montandon archive.



2-8-2 no. **52**, seen at Llanta towards the end of its life.



And the other side of the loco on the same occasion.

2-8-0 d/w 44", cyls. 17"x24", built by Baldwin in 1917 (101) and 1926 (102-3)

BLW class 10 28 E nos. 108, 126 and 150. Spec. in BLW volume 54 p389 and vol. 78 pp304+.

101 w/n 45107

102 w/n 58955

Appeared to be in service in 1947 [44].

103 w/n 59470



BLW archive pic of no. **101**; hi-res versions available from Railroad Museum of Pennsylvania. Note the very strange slope-back tender.

Such slopes were normally specified to improve the driver's view when switching, but this design would not do that well as the forward part of the tender is at full height.



No. **102**, with normal style tender.



BLW archive pic; hi-res versions available from Railroad Museum of Pennsylvania.

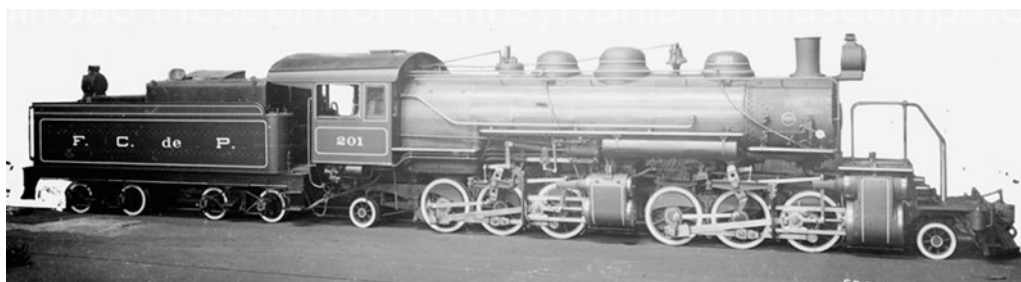


This is one of several photos showing one of the 2-8-0s at Barquito where it was probably located as a switcher/shunter. Note the front footstep fitted in place of the original pilot/cow-catcher.

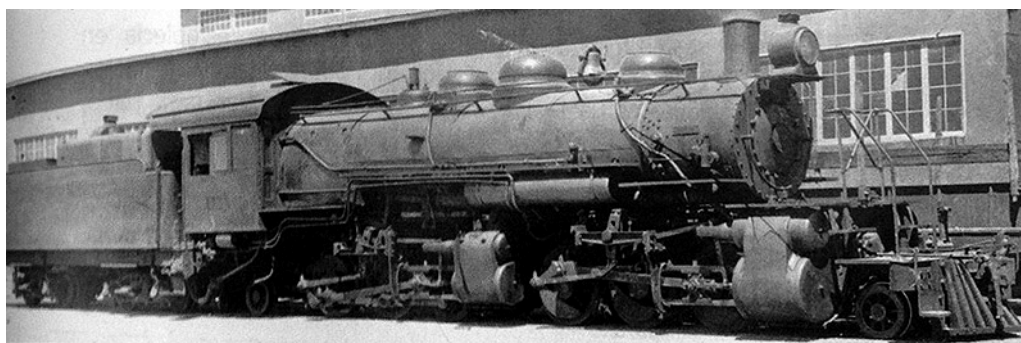
2-6-6-2 Mallet d/w 42", cyls. 16" & 25" x 20", built by Baldwin in 1917

BLW class 16-00 26/44 ¼ DD no. 8. Spec. in BLW volume 54 p379+.

201 w/n 45071



BLW archive pic; hi-res versions available from Railroad Museum of Pennsylvania.



The same loco in use, probably seen at the workshops in Llantas.

Shop at Llantas. *FC Potrerillos* had running powers over *EFE Pueblo Hundido* a Chanaral.

Sold to *Corporacion Nacional de Cobre de Chile (CODELCO)*.

First pair of diesels purchased new in 1957.

Baldwin drawings

The collection of Baldwin drawings at the deGolyer Library, Southern Methodist University, includes side elevation (SE) or cross section (CS) drawings for several designs built for the Andes Copper Mining Company.

Index#	DWG#	Tracing#	Road name	Road#	Date	Baldwin class	Number	Wheel	Dwg typ	Size
359-5CX	12123	-	Andes Copper Mining	102	1926	10-28 E	150	2-8-0	SE	26 x 66

359-5X	12124	-	Andes Copper Mining	102	1926	10-28 E	150	2-8-0	CS	26 x 66
359-5AX	12293	-	Andes Copper Mining	53	1926	12-34 1/4 E	80	2-8-2	SE	26 X 66
359-5BX	12294	-	Andes Copper Mining	53	1926	12-34 1/4 E	80	2-8-2	CS	26 X 66
4002-6	9071	-	Andes Copper Mining	201	1917	16-00 26/44 1/4 DD 8		2-6-6-2	SE/CS	6

The list of drawings in which these details were found is at <https://www.smu.edu/~media/Site/Libraries/degolyer/pdfs/BLW-EDWG-RoadName.pdf> whilst arrangements to purchase copies can be found at <https://www.smu.edu/libraries/degolyer/Research/Permissions>

3.3.7 Proposed *Trasandino* line from Puquios to the Argentine border and on to Tinogasta

Background

From 1874 onward there had been a variety of proposals to build a railway eastward from Puquios, at the eastern end of the Copiapó railway, via San Andres to cross the Andes via the Portezuelo de San Fransisco or El Valle Ancho, and connect with the *FC Central Argentino* at Tinogasta. In 1907 this scheme was resurrected by Ingenieros Pizarro, Coe and Prado. A two part paper on the project appeared in the *Anales del Instituto de los Ingenieros de Chile* in April and May 1912, presented by Carlos Lanús C. Route options included variants with and without rack sections. Don Luis Lagarrigue was seeking permission from the government to move ahead with this proposal in 1925, but no work seems to have started.

Proposed locomotives

The paper mentioned above included comprehensive calculations exploring the nature of the locomotives that would be needed.

Adhesion locos: 63 tonnes, six-coupled, cylinders diameter 49.25cm, stroke 40cm (over square!), water capacity 6 to 7 cu. m., coal capacity 1 cu. m.(sic!), 733HP.

Rack and Adhesion locos: weight 47 tonnes, 8-coupled with one carrying axle (presumably similar to the Esslingens later designated *tipo U* on the *EFE* and *FCALP*), 12 tonnes axle loading, 522HP.

Rotary snow plough: self-propelled, “using the Sulzer system as on the Bernina Railway in Switzerland”. (This is now Rhaetian Railway RhB steam snow blower Xrot d 9213 and is preserved in working order at Pontresina. It runs on two six-coupled bogies and is in fact a Meyer type locomotive).

It was expected that nine locos and one snow plough would be required. There seemed to be no more specific details about the number of adhesion and/or rack and adhesion engines to be needed.

3.4 Coal railways

3.4.1 *El FC de Jañes (or Caleta Yane) a Huena Piden*

1890-1895?



Background

Metre gauge [16]. Purchased by the Huena Piden (Chili) Colliery and Railway Co. Ltd. in 1890, which is the year the company was formed. Proposals set out in [MOBR173]. Around 15 km long, and probably built around 1890. From the port of Jañes or Caleta Yane. Yane is at the southern end of the headland between Lebu and Lota. Huena Piden is in the hills about 10km to the east. The later proposal for a metre gauge line from Curanilahue to Yane (which see below) would have used the lowest 3 km. of the earlier route. The company seems to have been fairly short-lived, and certainly by 1895 had sold its steam tug ‘YANEZ’ (the erstwhile ‘GOOLE No. 7’ of the Goole & Hull Steam Towing Co. Ltd.), to the Chilean Navy. It was wound up in 1898, as confirmed by documents in The National Archives, Kew, London [BT 31/488/31699 and BT 34/700/31699].

Contemporary reports

1 “A unas ocho leguas al Norte del pueblo de Lebu, algo al Sur de la punta Yanes y a pocos kilometros del mar, se encuentra el mineral de Huenapiden, que desde hace algunos anos esta en el mas completo abandono, por haberse agotado los capitales que se reunieron para su explotacion, como igualmente el carbon.

El dinero se empleo, en su mayor parte, en la construccion de un magnifico ferrocarril y de un largo muelle de fierro. Todo se estudio en la superficie; pero se olvidaron completamente del estudio jeologico de esta region que, de seguro, les habria puesto en dudas de la poca extension de los mantos.” [45, in issue of August 1907]

2 “En el año 1890 se formó en Londres, bajo el título de «Colliery Railway C.º Limited», una sociedad con un capital de doscientas sesenta mil libras esterlinas, para la explotacion de los mantos do carbon existentes en Huena Piden, al sur de Arauco i que trabajaba a la sazón el señor don Roberto Mac-Kay.

Los trabajos se iniciaron con gran entusiasmo i a los pocos meses se ocupaban doscientos trabajadores en las minas; al mismo tiempo que se construía un ferrocarril con un metro de trocha para unir este mineral al puerto de Yañez. situado a 21 kilómetros al norte del de Lebu, salvando desde las mimas una distancia de 15 kilómetros.

Los rieles empleados pesaban 20 kilogramos por metro.

Desgraciadamente esta sociedad duró apenas dos años; la falta de reconocimientos previos de sus yacimientos carboníferos, la ignorancia de las fallas i de los botamientos que se presentaron, dieron por resultado la inutilidad de valiosas instalaciones i la pérdida de importantes sumas.

Después del agotamiento de su capital, esta sociedad que se halda formado bajo los auspicios mas favorables, se vio obligada a suspender sus faenas i desde entonces quedaron desiertas estas minas i su ferrocarril completamente abandonado.” [45, in issue of Oct-Nov 1907].

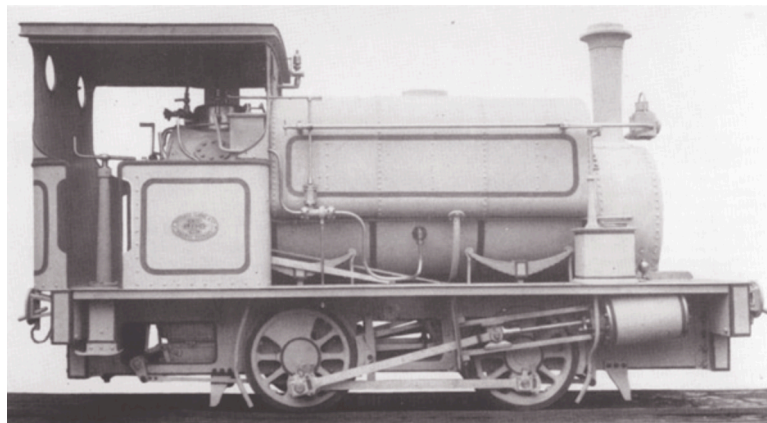
0-4-0ST d/w 33", cyls. 11x16"OC, built by Hudswell Clarke in 1891

Ordered by Huena Piden Colliery & Railway Co. To be completed by July 29th 1991 but actually not finished until September 19th. Cost £750 ordered by J. F. Levick & Co. Cornhill Chambers, London EC.

‘HUENA PIDEN No. 1’

w/n 389

It seems possible that this loco was sold to the *EFE* and became the *Red Sur*’s *tipo G* loco, about which nothing is known other than that it was an HC 0-4-0T loco. As no other HC metre gauge four-coupled locos were built for Chile, the obvious conclusion may be drawn.



Hudswell Clarke builder’s photo, from *Hudswell Clarke & Co. Ltd Railway Foundry – A Pictorial Album of Narrow Gauge Locomotives* by Ron Redman.

3.4.2 *El FC de Mina Loreto*

1901-1950?

Background

Metre gauge. Opened 1901 on trackbed of earlier 3' 6" gauge line at Punta Arenas. Closed around 1950.

0-4-2T d/w 33", cyls. 9"x14", built by Baldwin in 1900

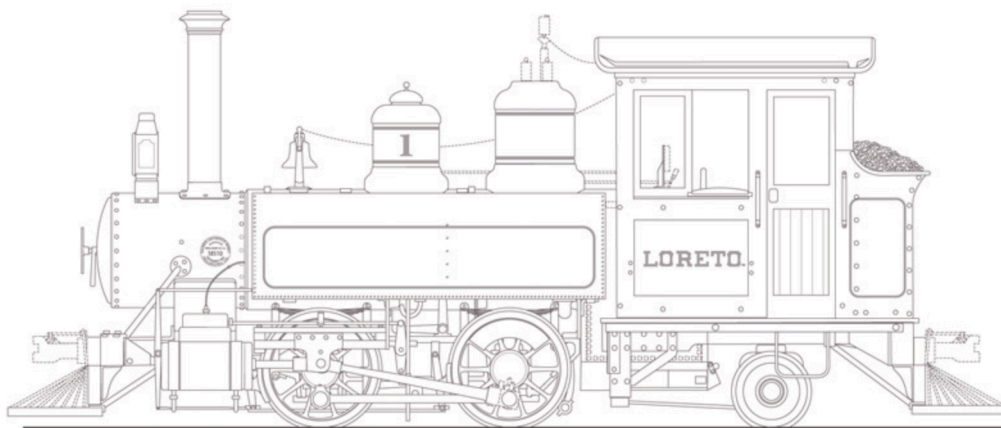
Ordered for Agustin Ross. BLW class 6-11 1/3C number 47. Erecting card drawing numbered 465-39 3820 is in the DeGolyer Library collection.

‘LORETO’

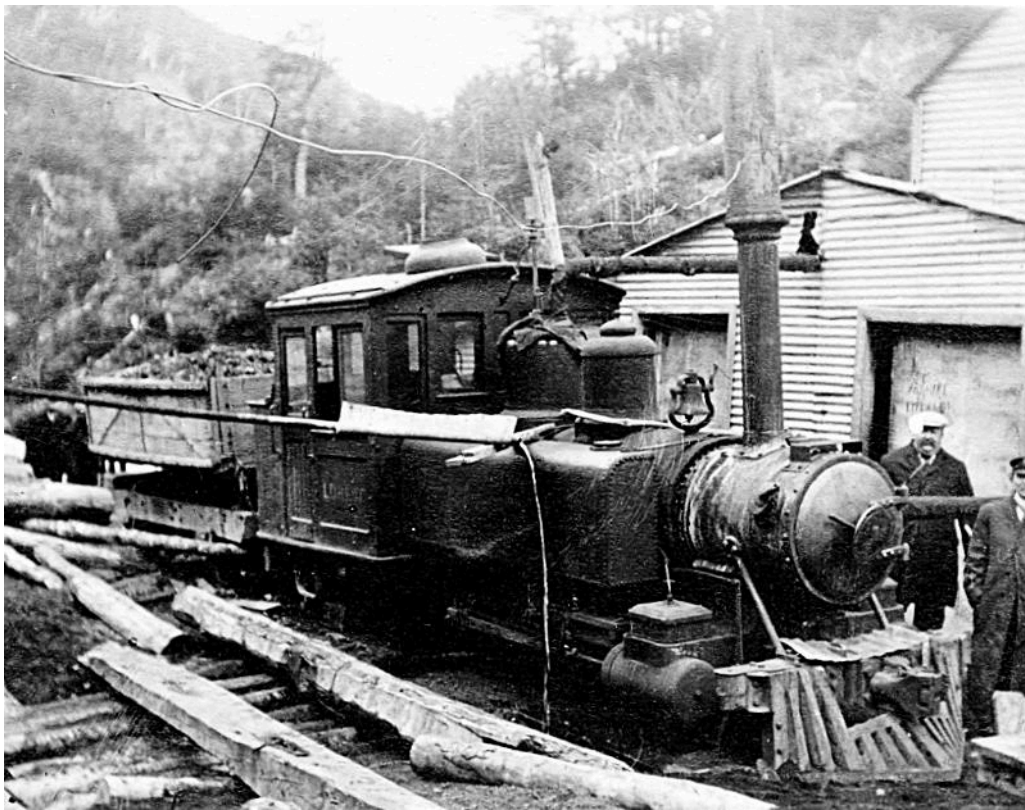
w/n 18510



Baldwin builder's photo. High res versions available from the Railroad Museum of Pennsylvania.



This modern drawing was created using the Baldwin erecting card drawing available from the DeGolyer Library, SMU, Texas, and from study of a number of photographs.

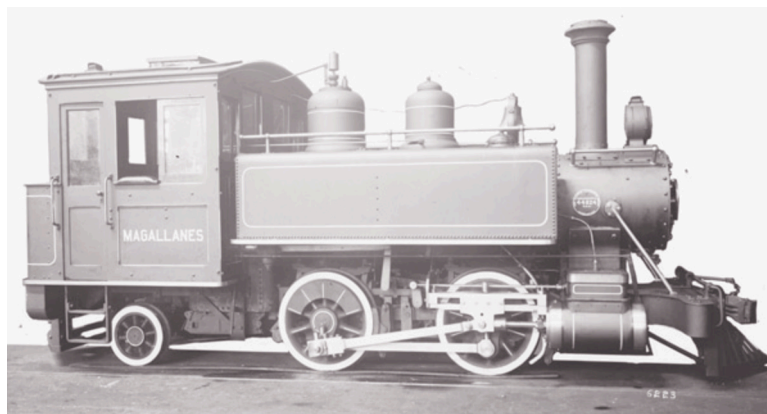


'LORETO' in later days acting as a stationary boiler, probably at the mine.

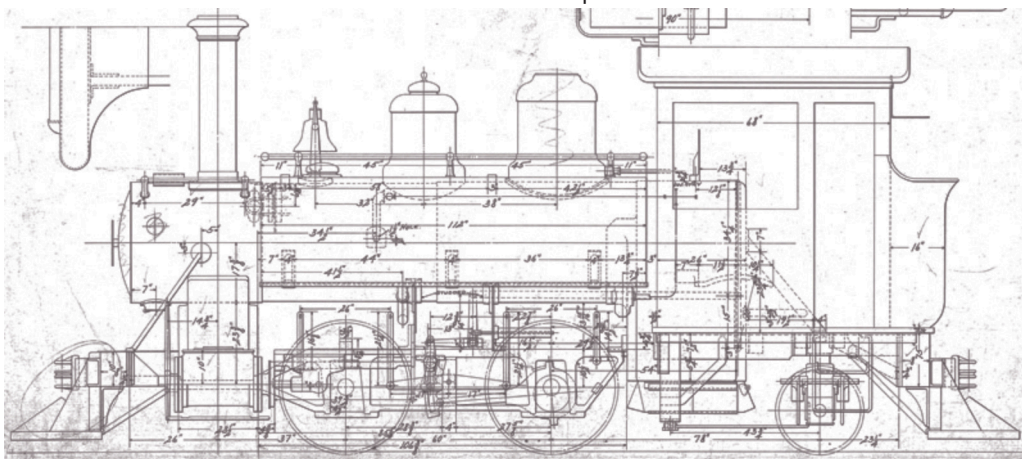
0-4-2T d/w 37", cyls. 11"x16", built by Baldwin in 1906 and 1917

First ordered by Señor Agustin Ross, the entrepreneur behind the mine and railway, second delivered via W. R. Grace & Co. Erecting card drawing numbered 471-8 5784 is in the DeGolyer Library collection.

'PUNTA ARENAS'	w/n 29719	BLW class 6-16 1/3 C number 59.
'MAGALLANES'	w/n 44824	BLW class 6-16 1/3 C number 67.



Baldwin builder's photo.



Baldwin erecting card drawing of one of the later larger locos.

0-4-0WT d/w ?, cyls. ?, built possibly by Borsig

This was a very Teutonic-looking machine, so far not identified but Borsig delivered a number of possible metre gauge 0-4-0WTs to Chile. It may have been second-hand from elsewhere.

'CHILE'

w/n ?



Baldwin drawings

The collection of Baldwin drawings at the deGolyer Library, Southern Methodist University, includes side elevation (SE) or cross section (CS) erecting card drawings for two designs built for the *FC de Mina Loreto*.

Index#	DWG#	Tracing#	Road name	Road#	Date	Baldwin class	Number	Wheel	Dwg typ	Size
465-39	3820	-	Ross, Agustin	1	1900	06-11 1/3 C	47	0-4-2	SE/CS	3
471-8	5784	-	Ross, Augustin	2	1906	06-16 1/3 C 5	9	0-4-2	SE/CS	3

The list of drawings in which these details were found is at <https://www.smu.edu/~media/Site/Libraries/degolyer/pdfs/BLW-EDWG-RoadName.pdf> whilst arrangements to purchase copies can be found at <https://www.smu.edu/libraries/degolyer/Research/Permissions>

3.4.3 The proposed *FC de Curanilahue a Puerto Yane*

Background

This 1908-9 proposal for a metre gauge coal railway would have headed west from Curanilahue to Puerto Yane or Puerto Janez, just south of the big headland between Lota and Lebu. The route would have gone via Sanfuego, Villa Alegre, Malamala, and Quiapp to the coast and then turned north-west. The last three kilometres of the route would have taken over the trackbed of the earlier metre gauge line from Huena Piden (see above). The promoters seem to have been the *Cía de los Ríos de Curanilahue*, with the aim of gaining control of the export of their own coal and of bypassing the *FC de Arauco* which had insufficient capacity at that time. Of course the *Cía. de los Rios de Curanilahue* later bought broad gauge locomotives to facilitate interchange with the Arauco railway, and some years later actually purchased that railway, but one must assume that metre gauge was chosen for the proposed route to Puerto Yane owing to the terrain to be crossed. The line was to have been laid with rail of 23.8kg/m. or roughly 48lb/yard, and the maximum uphill gradient was to have been 1.9% or 1 in 52 for loaded trains, and 3% or 1 in 33 against empty trains. One can't help wondering whether this proposal was concocted purely as a means of applying pressure on the *FC de Arauco*. Certainly the *Ríos de Curanilahue* company purchased their first mainline-capable broad gauge loco from Baldwin that same year, almost certainly with the intention of running it over the *Arauco* route.

Also see the volume '*Estudios sobre Ferrocarriles*, in the *Seccion Chilena* of the *Biblioteca Nacional*, *Ubicación 10 928-23*'.

Proposed locomotives

A considerable amount of detail about the proposal, including calculations as to the nature and power of the locomotives required, can be found in three issues of the *Anales del Instituto de Ingenieros de Chile* around 1909.

Although the scheme was abandoned without ever having been constructed, the promoters got as far as inviting tenders for the building of locomotives. The Glasgow-based consulting engineers Strain & Robertson sent the specifications for two shunting locos (their contract 15) and an unspecified number of goods locos (their contract 17) to the manufacturers NBL, Avonside, Beyer Peacock, Borsig, Hawthorn Leslie, Robert Stephenson, Andrew Barclay and Haggans early in 1908. Avonside, Manning Wardle and NBL certainly quoted for these contracts, and Avonside in their usual way tried to nudge Strain & Robertson in August 1908 to see if any decision had been made, but without success.

3.5 Industrial systems

3.5.1 Contractors

Sres. Germain y Sierra

Background

The *Germain y Sierra* partnership was best known for the construction of railways under contract to the DOP. However, they also owned steamships and thus were presumably active in a number of fields. This company also had broad gauge locos and at least one on the 60cm gauge. See appropriate files. The broad gauge locos were later sold to the *EFE*. It would appear that the same happened to their metre gauge engines as six VIW 0-6-0s and 2-6-0s were recorded in the 1930 US report as being in the *EFE* fleet. Judging by their position in the list, their *EFE* numbers may have been above those of the *tipo W mikados*, ie. above 35xx.

0-6-0T d/w 30", cyls. 11"x18", built by Vulcan Iron Works in 1909

Delivered via Valparaiso. US report table says cyls. 11x16".

1 'LAURITA' w/n 1414

2 'OLGUITA' w/n 1415



VIW builder's photo, from catalogue

2-6-0 d/w 38", cyls. 13"x18", built by Vulcan Iron Works in 1910

Ordered by Eduardo Germain, later transferred to Germain y Sierra.

3 w/n 1626

4 w/n 1627

A poor quality photo seems to show one of these locos at the opening of the Curicó to Hualañé line in 1912, by now fitted with a cow-catcher/pilot. In 1917-18 there remained a VIW 2-6-0 on the Hualañé line, by then numbered **23**, and having the same principal dimensions as these engines. It is suspected that these locos will have been sold to the *EFE* on the completion of Germain y Sierra's contracts, like their broad gauge locos.



VIW builder's photo, from catalogue.

0-6-0T d/w 21", cyls. 9¾"x15¾", built by Vulcan Iron Works?

There are no other obvious metre gauge VIW locos for Chile, but *Germain Y Sierra* bought all their new locos from VIW.

?	w/n ?
?	w/n ?

The *Boletín del Ministerio del Industria y Obras Públicas* reported in November 1918 that GyS had offered two metre gauge locos for sale to the *EFE*, standing at Barón and at a price of \$12,000 Pesos of 18d each [31, 1918 p1115]. No further details were given.

MacDonald Gibbs & MacDougall Chile

Metre gauge. This branch of a London firm was the main contractor for the construction of the Chilean Northern Railway, the *FCNC*.

0-6-0T d/w ? cyls. ?, built by O&K in 1912

?	w/n 4480	80hp
---	----------	------

El Sindicato de Obras Públicas

This was a syndicate of private contractors, not the government's *Dirección de Obras Públicas*. It was a consortium of Chilean engineers including Napoleon Peró, José Pedro Alessandri, Julio Subercaseaux and Luis Barros Borgoño (Was this the same man who became Vice-President of Chile?). It owned locos on other gauges too. It was awarded the contract to build the *FCALP* in March 1906, but deprived of it in August 1907 owing to lack of progress. These metre gauge locos were almost certainly purchased for that contract. However, the 2-6-0s and 0-8-0T all ended up owned by the *DOP* so they may well have been sold on in 1907 when the contract was terminated.

2-6-0 d/w 42", cyls. 15x18", built by Baldwin in 1907

BLW class 8-24D numbers 163-5. Spec. ins in vol. 30 p213. Couplings to be same as on Chilean State Railways. Le Chatelier brake. Mark on tank 'SINDICATO DE OBRAS PÚBLICAS'. Ordered via Wessel Duval & Co. Only two of these were under Sir John Jackson Ltd's ownership/supervision during the *FCALP* contract. Erecting card drawing numbered 467A-20 5893 is in the DeGolyer Library collection.

10	w/n 30474
11	w/n 30473
12	w/n 30452

All three seem to have gone eventually to the *DOP*; see that section above. One is shown in the 1919 *RN* loco list as having originally had the name 'VALIENTE' (= brave), though it is not known where this came from. One was photographed early in the Sir John Jackson (Chile) Ltd. construction period carrying the number 4 (see below).

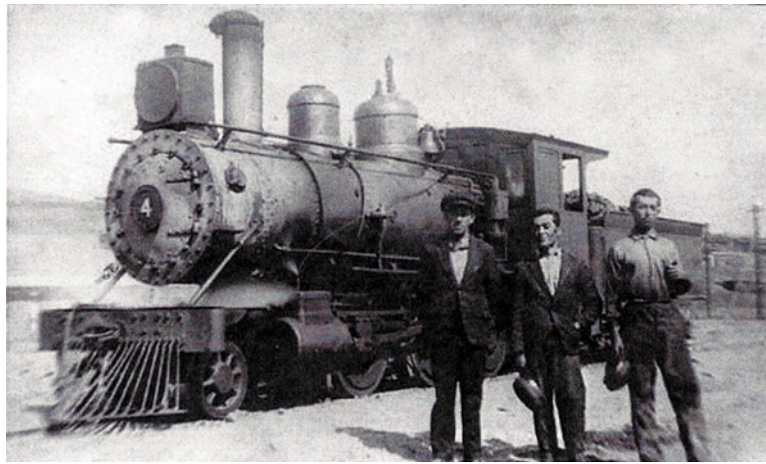


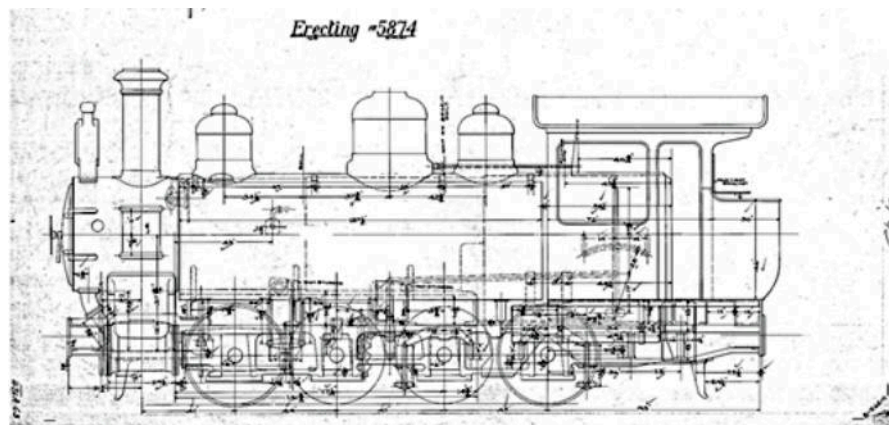
Photo by Sir John Jackson, Edinburgh University archives collection.

0-8-0T d/w 42", cyls. 16x20", built by Baldwin in 1907

BLW class 8-26E number 11. Spec. is in vol. 30 p212. Ordered via Wessel Duval & Co. Clearly specified for use on construction of *FCALP* as was to be usable on grade of 6%, ie. the rack sections. However, this loco, then possibly numbered **9**, does not seem to have been used by Sir John Jackson Ltd.

20 w/n 30407

This also seems to have gone to the *DOP*; see that section above.



Baldwin erecting card drawing for this loco, kindly provided by Sr. Harold Middleton, probably available from the Railroad Museum of Pennsylvania.

0-4-4-4-0 Shays d/w 36", cyls. 12x15", built by Lima in 1907

Ordered via W. R. Grace & Co.

30 w/n 1914

31 w/n 1915

These Shays may not have been actually used by Sir John Jackson (Chile) Ltd., the later contractor on the *FCALP*, but they do then seem to have become part of the railway's operational fleet. One was photographed early in the SJJCL era carrying the number **6** (see below).



Presumably a Lima builder's photo. The wording on the tank is 'SINDICATO DE OBRAS PUBLICAS' and the number is **31**.

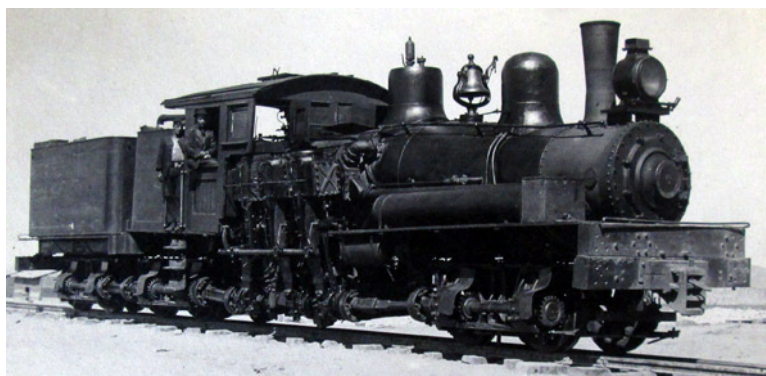


Photo by Sir John Jackson, Edinburgh University archives collection, but has also been published elsewhere.

Baldwin drawings

The collection of Baldwin drawings at the deGolyer Library, Southern Methodist University, includes side elevation (SE) or cross section (CS) drawings for two designs built for the *Sindicato de Obras Publicas*.

Index#	DWG#	Tracing#	Road name	Road#	Date	Baldwin class	Number	Wheel	Dwg typ	Size
467A-20	5893	-	Sindicato de Ob. Pub.	10-12	1907	08-24 D	163-165	2-6-0	SE/CS	3
472A-63	5874	-	Wessel Duval & Co.	20	1907	08-26 E	11	0-8-0	SE/CS	3

The list of drawings in which these details were found is at <https://www.smu.edu/~media/Site/Libraries/degolyer/pdf-s/BLW-EDWG-RoadName.pdf> whilst arrangements to purchase copies can be found at <https://www.smu.edu/libraries/degolyer/Research/Permissions>

The North & South American Construction Co.

Background

This American company was formed specifically to bid for a batch of Chilean government railway construction contracts. The whole sorry saga is set out in an appendix at the end of the broad gauge locos list.

As well as winning broad gauge contracts for which it ordered a batch of fourteen Baldwin 4-4-0s (see broad gauge list sections 1.4.4 and 1.3.1), several metre gauge contracts were won. These included the lines from La Calera to Cabildo, Los Vilos to Illapel, San Marcos to Paloma, Huasco to Vallenar, and Talca to Constitución. There seems to have been no equivalent large order of mainline metre gauge locos, but a summary list of rolling stock received by the state after the collapse of the company mentions “*Tres locomotoras de trocha angosta*” [*DOP Memoria* 1891, p19]. As the only supplier of rolling stock mentioned was Browne Beéche of Valparaíso and New York, any locos purchased were probably American, but this has not been confirmed.

There are no obvious candidates in the BLW list. The Porter list includes metre gauge locos 1027 and 1121 (0-4-0Ts of 1889), for J. B. Speed & Co. of Louisville Kentucky which is where the N&SACCo was first registered. J. B. Speed was an important businessman in Louisville in his own right but may have had links to the N&SACCo. Also for an unidentified customer was 1118 (a metre gauge 0-4-2T of 1889) for S. H. Payne & Co. of NY, “loaded on steamer Philadelphia”

The company's Chilean assets eventually passed to Señor Julio Bernstein but were then expropriated by the government. There were around six unidentified small metre gauge locos in the *DOP* fleet during the 1890s, three of which probably originated from this source. At present no further details are known.

La Contratista Pay-Belfi in Arica

The Spanish version of Wilfred Simms' book 3 *Los Ferrocarriles de Chile - Volumen 3 - Norte de Chile*, published on-

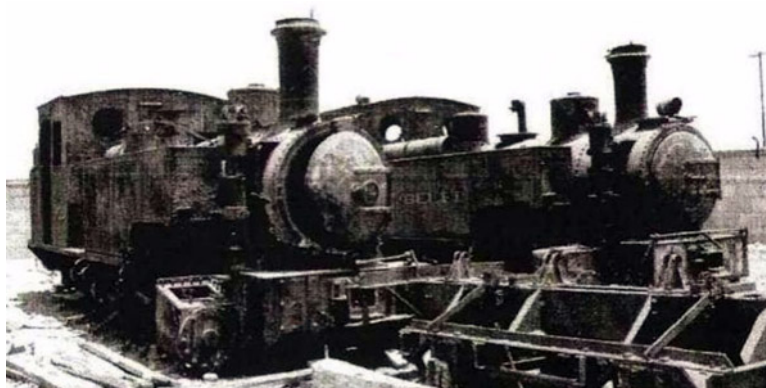
line in May 2017 (at https://issuu.com/rbp714/docs/los_ferrocarriles_de_chile_3) illustrates two ex *FCAB* Hunslets standing in this contractors' yard in Avenida Argentina, Arica, during 1987. There was also an unidentified O&K 0-6-0WT supposedly from an *oficina* in the Lagunas area.

0-6-4T d/w 36", cyls. 15½"x18", built by Hunslet in 1907, rebuilt to 0-6-2T and converted to metre gauge

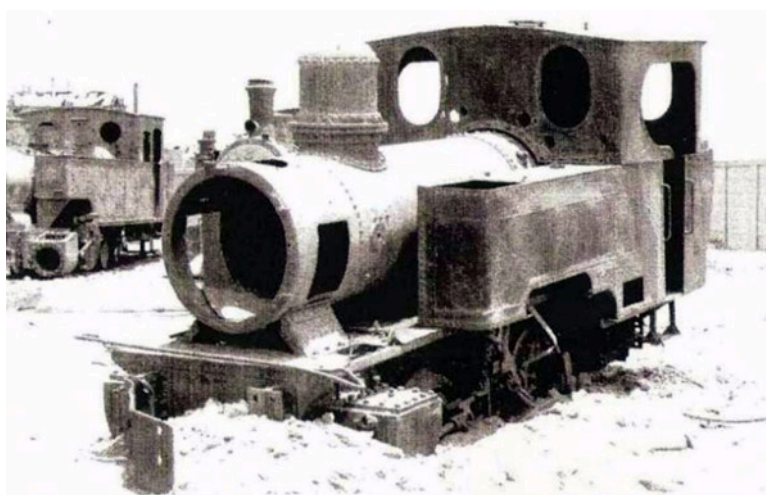
21 w/n 945

25 w/n 949

These two locos apparently still survive in 2020, and Ian Thomson is attempting to find homes for them, the current owner being amenable to their rescue [Reported in *Locomotives International*, November 2019]. There has been no recent mention of the O&K 0-6-0T, so that may not survive.



Two views of this pair lying derelict in Arica.



And another smaller loco lying with them. Photos from the late Wilfred Simms' book 3.

3.5.2 Nitrate *oficinas*

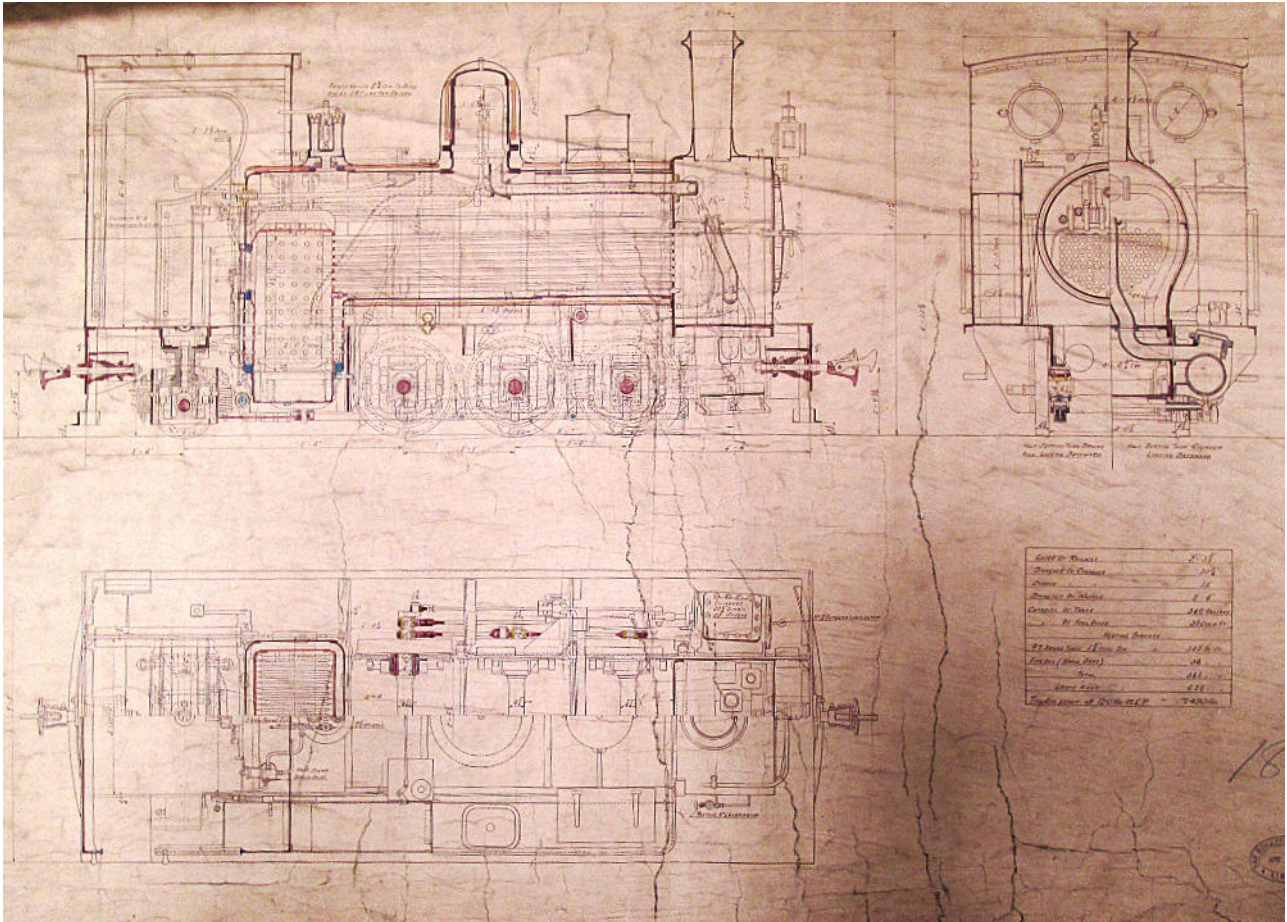
Oficina La Granja

Metre gauge. Loco built for Astorexa & Co. (or maybe they were the import agents).

0-6-2T d/w ?, cyls. ?, built by Hunslet in 1912

‘FELISA’

w/n 1106



A GA drawing found in the Hunslet archive at Statfold Barn Farm in Staffordshire, UK.

La Compañía Salitrera de Taltal

Metre gauge.

0-6-0 d/w ? cyls. ?, built by Borsig in 1930

Delivered via Folsch & Martin AG.

?

w/n 12221

Oficina Morena?

Metre gauge.

0-4-0T d/w ? cyls. ?, built by Borsig in 1912

Delivered via Folsch & Co. to Taltal.

? w/n 8344

Oficina Paposo

Background

Metre gauge. It is not clear where this was. The best-known *oficina Paposo*, in Tarapacá, was linked to the Nitrate Railways but it is unlikely that that location would have used metre gauge.

0-4-0ST d/w ?, cyls. 11"x16", built by ALCo Cooke in 1920

Ordered via W. R. Grace & Co. ALCo order no. C601.

5 w/n 61712



ALCo builder's photo, from ALCo advertisement.

0-4-0T d/w 30" cyls. 11x16", built by ALCo-Cooke in 1926

'Narrow gauge' ordered via W. R. Grace & Co. Order no. C810; type no. 040 T 39.

6 w/n 66687 Ordered for *Oficina Paposo* (The last loco from the Cooke works).



ALCo builders' pic.



One of these ALCo 0-4-0STs out on the nitrate pampa.

The Antofagasta Nitrate Co.

Metre gauge.

2-6-2T d/w 44", cyls. 15"x20", built by Baldwin in 1917

BLW class is 10-24 1/4D nos. 117-118. spec in vol. 66 p382. Erecting card drawings are 365A-3 and 729A-64 in De-Golyer Library collection.

- | | | |
|----------|-----------|---|
| 1 | w/n 47434 | Later became <i>FCTT</i> no. 143 . |
| 2 | w/n 47435 | Later became <i>FCTT</i> no. 144 . |

Presumably must have been rebuilt to 3' 6" gauge when sold to the *FCTT*.

2-6-2 d/w 44", cyls. 15"x20", built by Baldwin in 1920

Oil burners. BLW class 10-24 1/4D nos. 126-7. Spec. page is at vol. 66 p 384-5.

- | | | |
|----------|-----------|---|
| 3 | w/n 52852 | [21] says ' <i>CSA Oficina</i> ' but this may have been the destination rather than a loco name. Spec. page says both lettered ' <i>CSA OFICINA J. F. VERGARA</i> ' on cabsides. <i>Oficina José Fransisco Vergara</i> was later owned by Lautaro Nitrate and was located 10 km from the <i>FC Longitudinal</i> . In 1926 it possessed these four 45T Baldwins and a 20T Koppel loco. |
|----------|-----------|---|

- | | | |
|----------|-----------|--|
| 4 | w/n 52853 | |
|----------|-----------|--|

0-6-0T d/w ?, cyls. ?, built by O&K in 1910

- | | | |
|----------|----------|---|
| ? | w/n 3948 | Built in 1910, 80hp. Regauged to 1m. Preserved at <i>Universidad Catolica del Norte</i> , Antofagasta, which is on site of the old <i>Fundicion de Plata</i> where the loco may have worked. Sr. Aitken Paez, see photo below, says that there were three of these locos regauged from 2' 6" to 1m. |
|----------|----------|---|



Photo by Marcelo Alejandro Aitken Paez, showing the ex-75cm gauge O&K at the Universidad Catolica de Antofagasta in August 2021.

Baldwin drawings

The collection of Baldwin drawings at the deGolyer Library, Southern Methodist University, includes side elevation (SE) or cross section (CS) drawings for one design built for Antofagasta Nitrate.

Index#	DWG#	Tracing#	Road name	Road#	Date	Baldwin class	Number	Wheel	Dwg typ	Size
365A-3	9846	-	Antofagasta Nitrate	3-4	1920	10-24 1/4 D	126-127	2-6-2	SE	4
729A-64	9847	-	Antofagasta Nitrate	3-4	1920	10-24 1/4 D	126-127	2-6-2	CS	3

The list of drawings in which these details were found is at <https://www.smu.edu/~media/Site/Libraries/degolyer/pdf-s/BLW-EDWG-RoadName.pdf> whilst arrangements to purchase copies can be found at <https://www.smu.edu/libraries/degolyer/Research/Permissions>.

The Lautaro Nitrate Co. Ltd.

Background

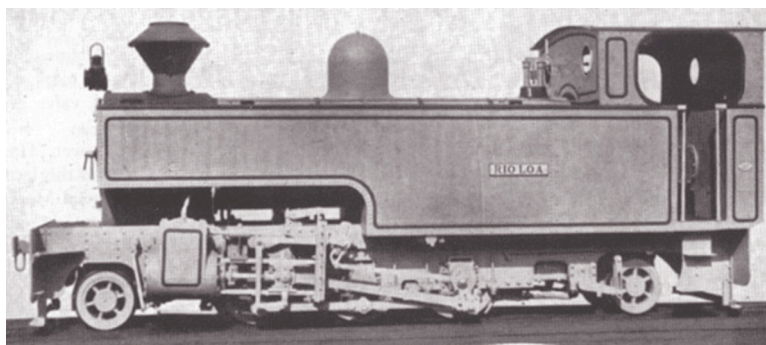
Metre gauge. See also this company's locos on 3' 6" and 2' 6" gauges. These locos were probably ordered specifically for *Oficina Los Dones*, north of Mejillones and operated by the *Cia. Salitrera Los Dones* with the Lautaro Nitrate Co.

Summary in 1926: *Los Dones* (Lautaro Nitrate Co. Ltd.), 10km from Los Dones station on *FC Longitudinal*, 10 locos, 3 of 30T, 1 of 36T, 1 of 8T, 1 of 16T, 2 of 14T, 2 of 10T.

2-6-2T d/w 33¼" cyls. 13x18", built by Bagnall in 1923

Via Baburizza & Co for Antofagasta. Spec says outside cyls., outside frames, oil burner, spark arrestor chimney. Completed 28-09-1923. Customer charged £1950 each. Names and w/n specifically set out. Spares ordered 1927 for these three locos at *Oficina Los Dones*, via Antofagasta.

'RÍO LOA'	w/n 2211
'RÍO SABRADOR'	w/n 2212
'RÍO SALADO'	w/n 2213



Bagnall advert photo.

Five similar Bagnall 2-6-2Ts were ordered for the *Oficina Chacabuco*, also owned by Lautaro Nitrate. These were built to 2' 6" gauge, but were to be convertible to metre gauge later, presumably with the impending gauge change on the nearby *FCAB* in mind. These were Bagnall 2238-2242 built in 1924, and numbered 7/1 to 7/5. Whether they were in fact converted to metre gauge is not known.

0-4-2T d/w 33", cyls. 12x16", built by Yorkshire Engine Co. in 1923

Ordered via Baburizza & Co. in London, and recorded in YECo order book as being 'Huxley' class engine, meaning that it was more-or-less a copy of Kerr Stuart's Huxley design (see section 3.5.4 for Kerr Stuart 'Huxleys' supplied to Antofagasta port). It is not known whether this was merely a 'Huxley' look-alike, or whether Kerr Stuart drawings were used. Certainly the side tanks looked rather different. This was YECo contract 243. The end user is not known but was very likely to have been Lautaro Nitrate as Baburizza Lukinovic were agents for this firm's *oficinas*.

?

w/n 1947

This engine now stands outside Copiapó station, looking rather different from its original guise. Whilst the changes in its appearance are explicable, its reason for being in Copiapó is less so. Of course as a metre gauge loco it would perhaps have readily been sold on when its original home had closed. Pablo Moraga reports that it arrived in Copiapó around 1992 on an *EFE* flat wagon, but that nobody knew where it had come from.

The following Lautaro *oficinas* were close to metre gauge mainlines, and might therefore have been the original customer for this loco:

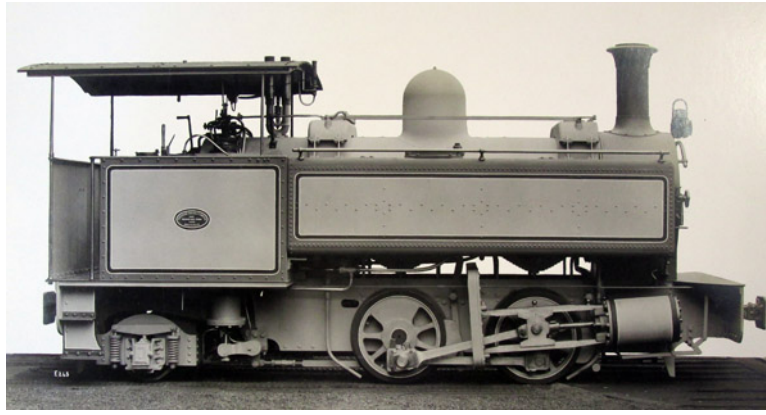
Los Dones about 10km from the *FC Longitudinal*,

José Fransisco Vergara also about 10km from the *FC Longitudinal*, but in the Tocopilla area so more likely to have used 3' 6" gauge originally.

Those that follow were on the *FCAB*, so would probably have used 2' 6" gauge at least until the regauging of that railway in 1928, *Aconcagua*, *Agustin Edwards*, *Anibal Pinto*, *Araucana*, *Arturo Prat*, *Aurelia*, *Ausonia*, *Blanco Encalada*, *Carlos Condell*, *Carmela*, *Chacabuco*, *Filomena*, *Francisco Puelma*, *José Santos Ossa*, *Perseverancia*, *Sargento Aldea*, *Savona*.

On balance, this engine may very well have been the 36T machine listed under *oficina Los Dones* on the previous page, but this needs confirming. Although the loco superficially looks smaller than the 30T Bagnalls mentioned there, Yorkshire engines had a reputation for being very solidly built.

Finally, whilst we cannot read too much into such changes to the loco as the replacement cab or the lightweight cow-catcher, both of which may have been cosmetic additions to suit the engine for eventual display, other changes such as the raised coupling height and the addition of the bell stand are more likely to have been functional changes during its working life.



Yorkshire Engine Co. builder's photo.

Sketch

Baburizza & Co Ltd of 5th Enquiry 183

1 Husley Type Locomotive, with side tanks,
 0-4-2. Type, metre Gauge, in accordance
 with their specification and Drg No 24468
Firebox & Tubes to be of Steel.
Cylinders to be 12" dia x 16" Stroke and
the wheels 2'9" dia, fitted with Kermode
Oil Fuel apparatus, and a suitable
Oil Tank for warming arrangement.
Delv as soon as possible, but not later than
four months (Y/E Cos No 1944).

Page from YECos order book.



The same loco as now plinthed outside the former railway station in Copiapó.

A pair of O&K metre gauge 0-6-2Ts were also supplied to Chile via Baburizza y Cia. in 1927, and may well have

come to a Lautaro *oficina*.

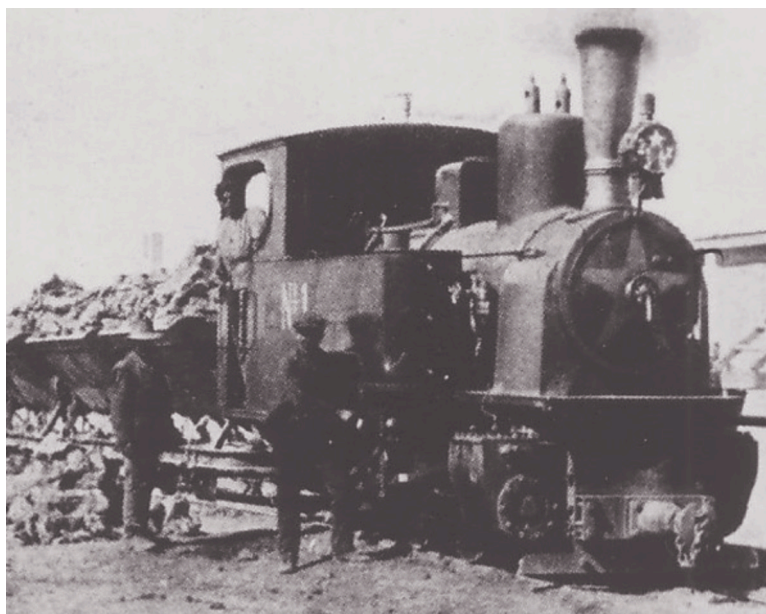
0-6-2T d/w ?, cyls. ?, built by O&K in 1927.

? w/n 11391

? w/n 11392

An unknown oficina

The German-built 0-6-0Ts seen below were originally thought to have been amongst the fleet involved in constructing new port works at San Antonio, as they bear the very large white-washed numbers that were common there. However, they do not have the side buffers necessary for the low wood-framed boulder-carrying wagons that were ubiquitous on that contract and the wagons seen here are v-skips, possibly carrying caliche to an *oficina*.



The locos seem to be identical but different features are visible on each photo. The image above seems to show an 0-6-0 wheel arrangement, whilst that below makes it clear that outside Stephenson's valve gear was fitted.



A. Zavala (nitrate plant owner?)

0-4-0T? d/w ?" cyls. 6½x10", built by Bagnall in 1888

Via A. Zavala, who may have been the customer.

‘DIANA’ w/n 983

‘AMARA’ w/n 984

3.5.3 Estancias and frigoríficos

La Estancia San Gregorio

Metre gauge.

0-4-0WT d/w 450mm, cyls. 140x200mm, built by Hanomag in 1910

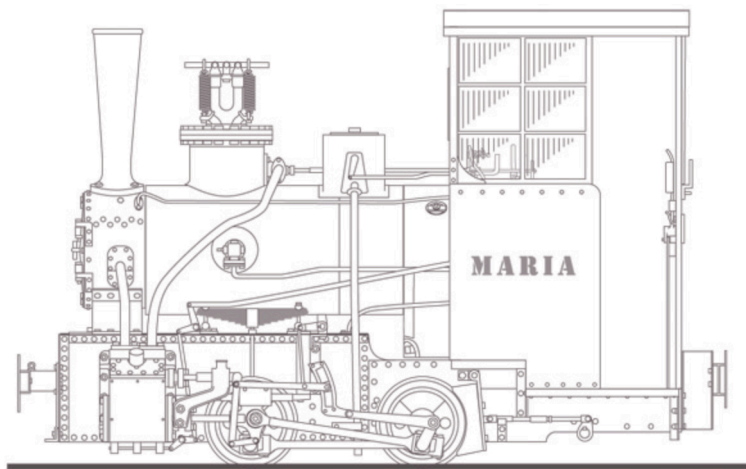
NB Hanomag list incorrectly says this was for 60cm gauge.

‘MARÍA’ w/n 4567

Out of use by mid 1940s. Now displayed at *Museo del Recuerdo* in Punta Arenas.



MCC's own photo, taken at the *Museo del Recuerdo* in Punta Arenas in 2013.



This modern drawing was created from careful measurement of ‘**MARIA**’ in Punta Arenas.

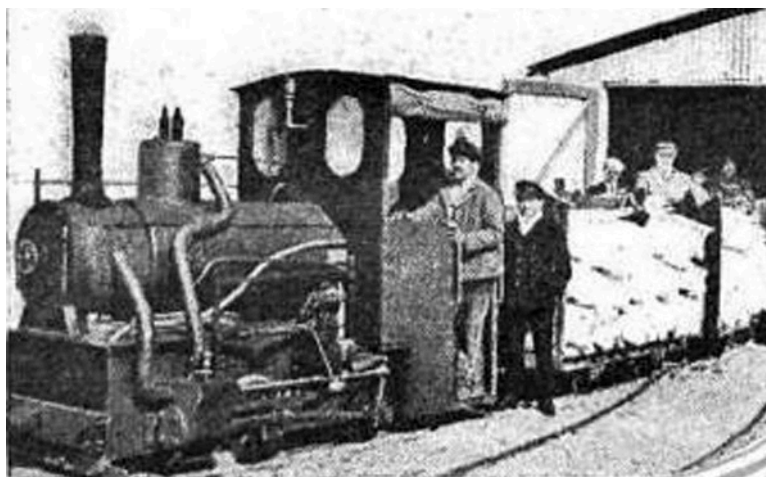
El Frigorífico Puerto Sara

Metre gauge. Close to Estancia San Gregorio but a short distance further south.

0-4-0WT d/w 450mm?, cyls. ?, built by O&K possibly in 1906 or 1912

? w/n possibly 4975 or 5824

Was at *Escuela Industrial* in Punta Arenas in 1975, later at *Museo del Recuerdo*, but since moved elsewhere.



Picture from the Argentine magazine *Caras y Caretas* in March 1918.



El FC de Puerto Bories

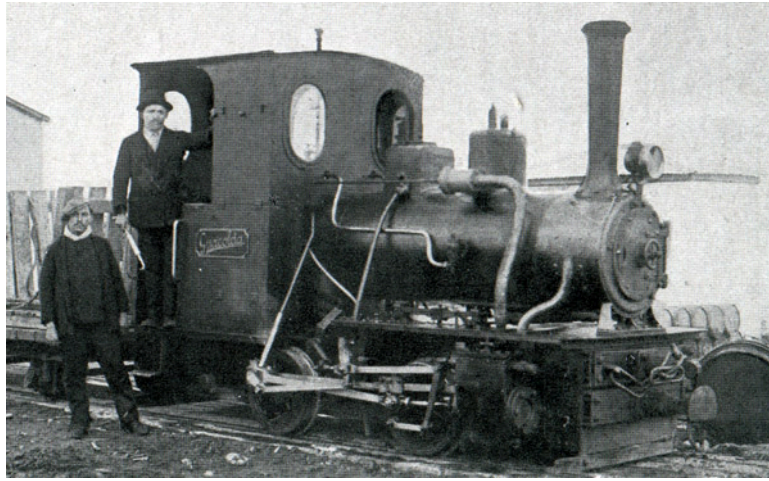
Metre gauge. Passenger line between Pto. Bories *frigorífico* and the town of Pto. Natales, to carry the *frigorífico* workers to the plant which was sited where deep water came close inshore.

0-4-0WT d/w ?, cyls. ?, built by O&K in 1913

‘GUACOLDA’

w/n 6962?

Later renamed **‘VALDES VERGARA’**. Survived in Puerto Natales, and now at the new hotel at Puerto Bories.



The same loco, renamed '**VALDES VERGARA**', lying forlornly in a yard behind the town museum in 2000. The safety valves are clearly an in-service modification.



And in 2014, having been moved to the new hotel in the old frigorífico buildings at Puerto Bories, and cosmetically restored. Photo by Ian Leith.

0-6-0T d/w ?, cyls. ?, built by Avonside in 1920

Class NJ. Ordered via Duncan Fox & Co., AE invoice book gives date of 15/11/1920 at price of £3188 6s 3d.

'McLELLAND' w/n 1861. Spares ordered via Francis Theakston Ltd. in 1927, 1928 and 1934. On display in Puerto Natales.

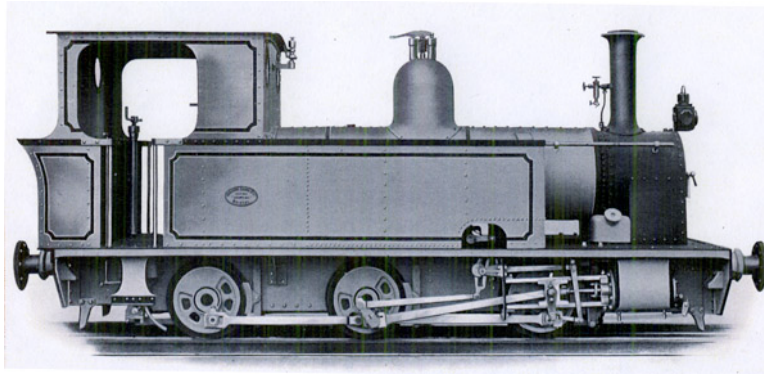


Illustration of Avonside class NJ 0-6-0T from Avonside catalogue.



Avonside 1861 as plinthed in the main square in Pto. Natales, seen in 2004.

Over the years it has appeared in a number of more gaudy liveries.
It looks very close in appearance to the catalogue image above, but
the smokebox saddle may well be a welded replacement.

El Frigorífico Hoeneisen in Punta Arenas

Metre gauge. One source suggested that this operation had had its own loco but later used an *FC Mina Loreto* loco, to
whose line it was connected.

3.5.4 Ports and shipyards

El Apostadero Naval de Talcahuano *Talcahuano naval base* from 1960 operating on a commercial basis as ASMAR

Background

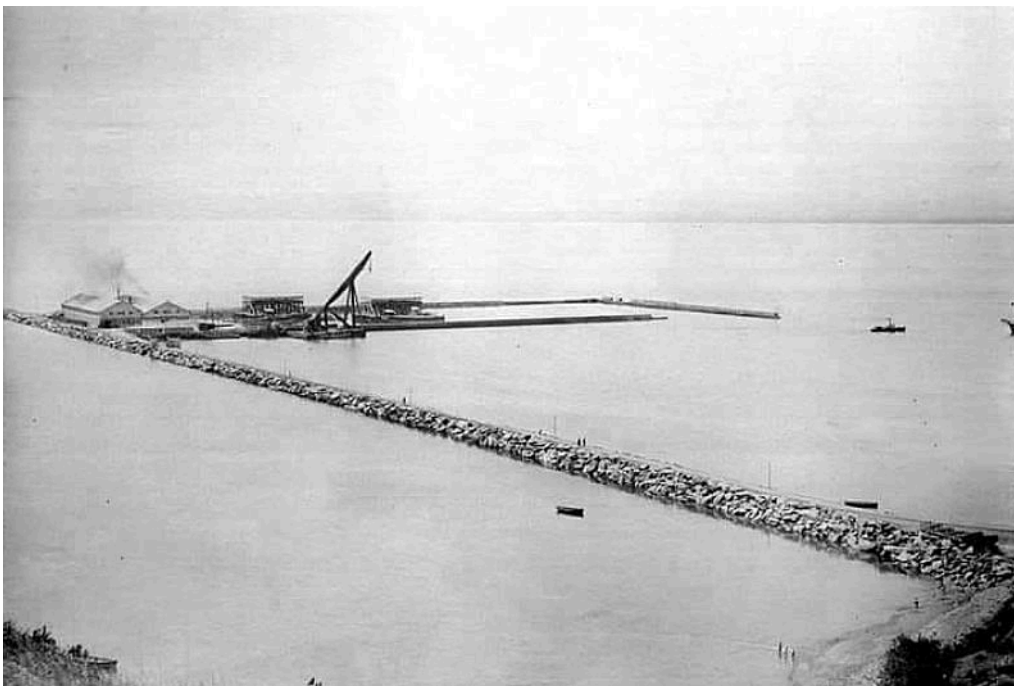
It had become increasingly clear during the 19th century that Valparaíso was not an adequate location for Chile's premier naval base. Ports on the west coast need protection in particular from strong southerly winds. After much debate, in 1888 it was decided to construct a dry dock a couple of miles north of Talcahuano in the supremely well sheltered Bahía de Concepción. The work was to be undertaken by the French firm *Dussaud et Chambon*, with M. Jacobo Krauss as the lead engineer. Amongst the preliminary works during the following couple of years was the construction of an 8 km metre gauge railway on a south to north route from quarries at San Vicente past Talcahuano *EFE* station, up the east coast of the Tumbes peninsula to the site of the new works and onward for several more kilometres to other quarries.

"El ferrocarril a las canteras tiene un desarrollo de 8 kilometros.

Nace a 650 metros al sur de la Punta Larga, cerca de la Boca Chica de la Quiriquina, recorre la ribera E. de la península de Tumbes, pasa por el corte que en Talcahuano se hizo para el ferrocarril del Estado, orilla las faldas del sur de la misma península, termina en la pequeña bahía de Pescadores de San Vicente.

Concluido el ferrocarril i en esplotation las canteras, se comenzo el rompe-olas, que arranca de la punta Amarilla, al norte de la aldea de Villarrica, i concluye en la roca Marinao." [49]

This first dry dock became the focus of a new naval base. The dock was completed in 1896, by which time the local facilities of the *Dussaud et Chambon* company, including the metre gauge railway, had been purchased by the navy. Amongst other duties the railway ran workers' passenger trains between the base and Talcahuano for many years. In 1910 another French firm, *Allard, Dollfus, Sillard et Wiriot*, began the construction of a second, larger, dry dock. This work was delayed by the First World War but was completed in 1924. Much of the material for this later work was brought in from further afield by the company's own broad gauge loco, and thus there is also a paragraph in the broad gauge file, in section 1.4.4.



A view of the future Talcahuano naval dockyard taken in 1895 whilst construction work was underway. The photographer was looking south-east, and must have been standing high on the slope of Tumbes, emphasising

how narrow was the sea level corridor along the peninsula from
Talcahuano town to the south.

The first locos

The running numbers listed below suggest that there must have been earlier unidentified locos at this location. The very first might well have been French-built as the contractor was a French company. Note that the locos below carried side buffers despite being for the metre gauge rather than for broad gauge.

0-4-0ST d/w 35", cyls. 9x16", built by Baldwin in 1895

Ordered for or via a Tomás Stillman at Talcahuano. Stillman was an engineer involved in the construction of this railway, as confirmed by his name on a plan of a section of the route. BLW class 4-12 C no. 30. Spec sheet says loco was to be similar to Class 4-8 C no. 34 which had been exhibited at 'Santiago Exposition'. Order was placed on 27th September 1895.

? w/n 14474

0-6-0T? d/w 42", cyls. 355x588mm 12x20", built by Lever Murphy in 1903-4

Ordered under *decreto* of the *Ministerio de Marina* no. 3.443 on 24th December 1903.

?
?
?
?

0-4-0T d/w 33", cyls. 11"x16", built by Baldwin in 1909

8 w/n 33194



High-res versions available from the Railroad Museum of Pennsylvania.

0-6-0 d/w 41", cyls. 14"x18", built by Baldwin in 1909

BLW spec card suggests that 33196 may have been no. 9.

9 w/n 33195

10 w/n 33196 BLW class 6-22D no. 40.



High-res versions available from the Railroad Museum of Pennsylvania.

Further arrivals in 1927?

File [MMAR2900] contains GA sketches from several builders supplied when tenders for four more 0-6-0T locos were invited in 1927. These were NBL, Borsig, Armstrong Whitworth via a Belgian subsidiary, and several from the Para Import & Export GMBH from unspecified German and Belgian builders. The AW offer was seen as being the most favourable, though probably requiring certain adjustments to track alignment to accommodate the width of the locos, but whether or not an order was placed is unknown.

Letters from the various manufacturers reveal that the locos to be purchased were particularly needed to haul the passenger service between Talcahuano and the shipyard, involving a load of possibly 325 tons.

Much more detail from file [MMAR2900] including side elevation sketches, is contained in Appendix 4 at the tail end of this file.

Baldwin drawings

The collection of Baldwin drawings at the deGolyer Library, Southern Methodist University, includes side elevation (SE) or cross section (CS) drawings for one design built for the Apostadero Naval de Talcahuano.

Index#	DWG#	Tracing#	Road name	Road#	Date	Baldwin class	Number	Wheel	Dwg typ	Size
676A-19	6358		Apostadero Naval	8	1909	04-16 C	137	2-8-0	SE/CS	3

The list of drawings in which these details were found is at <https://www.smu.edu/~media/Site/Libraries/degolyer/pdfs/BLW-EDWG-RoadName.pdf> whilst arrangements to purchase copies can be found at <https://www.smu.edu/libraries/degolyer/Research/Permissions>.

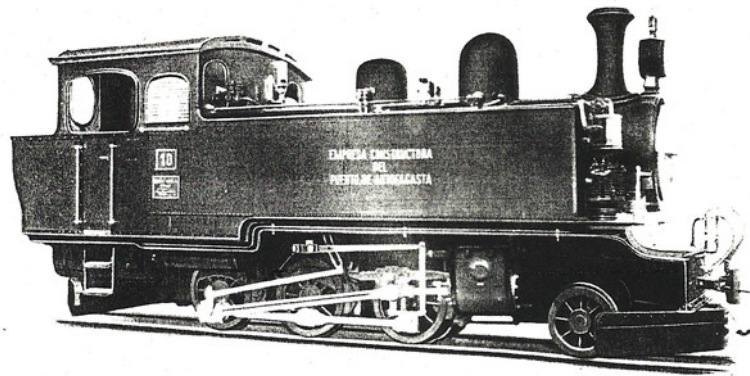
La Empresa Constructora del Puerto de Antofagasta

Metre gauge.

2-6-0T d/w 900mm, cyls. 400x450mm, built by O&K in 1926

350hp. via Baburizza Lagarrigue & Co., Antofagasta. An O&K catalogue image shows one bearing the running number '10' (see below). One or more passed on to the Puerto de Constitución where one was photographed around 1970.

?	w/n 10077
?	w/n 10078
?	w/n 10079



O&K builder's photo, from an O&K catalogue.

EmPorChi Antofagasta

Metre gauge port lines.

0-4-2T d/w ?, cyls. 12x16", built by Kerr Stuart for Mitrovich Brothers & Co. in 1919

Huxley class, probably for port use from new. Photo showing no. 5 in 1965 has 'ADMINISTRACION DEL PUERTO ANTOFAGASTA' on tank-sides.

1	w/n 4071	
2	w/n 4072	Photo taken in 1951 shows this loco in use.
3	w/n 4073	
4	w/n 4074	
5	w/n 4075	Photo below shows this loco in use in the port in 1965.
6	w/n 4076	
7	w/n 4077	Preserved? Carried 4073 plate when seen in 1978 and 1987 [16].

"HUXLEY"

(140 H.P.)

For 3 ft. 3 $\frac{3}{4}$ in. to 4 ft. 8 $\frac{1}{2}$ in. Gauge & for Rails 40 lbs. per yd. upwards.



Cylinders	12 in. diam. × 16-in. stroke	305 mm. × 406 mm.
Diameter of Coupled Wheels over Tyres ..	2 ft. 9 in.	839 mm.
" " Bogie Wheels	1 ft. 9 in.	533 mm.
Wheel Base—Fixed	4 ft.	1,219 mm.
" " Total	11 ft.	3,353 mm.
Tubes (Steel)	107 (1 $\frac{3}{4}$ in. diam.)	107 (44 mm. diam.)
Working Pressure	160 lbs. per sq. in.	11.24 kgs. per sq. cm.
Boiler Feed	Two Injectors	—
Firebox (Steel)	Steel	—
Water Tanks (Side)	500 gallons	2,271 litres
Fuel Space	45 cu. ft.	1.3 cu. m.
Heating Surface—Tubes	367 sq. ft.	34.14 sq. m.
" " Firebox	55 sq. ft.	5.11 sq. m.
" " Total	422 sq. ft.	39.25 sq. m.
Grate Area	8.9 sq. ft.	0.828 sq. m.
Approximate Weight, empty	15 tons 17 cwt.	16,107 kgs.
" " in working order	20 tons 10 cwt.	20,828 kgs.
Tractive Power	9,942 lbs.	4,519 kgs.

FOR COAL OR WOOD FUEL.

A Kerr Stuart catalogue page on the Huxley class locomotives.



Photo supposedly by a Mr. Harvey Meston, taken in 1965.



Probably no. 7 as explained above. Plinthed somewhere, possibly in Antofagasta.

Construction of the *Puerto de San Antonio*

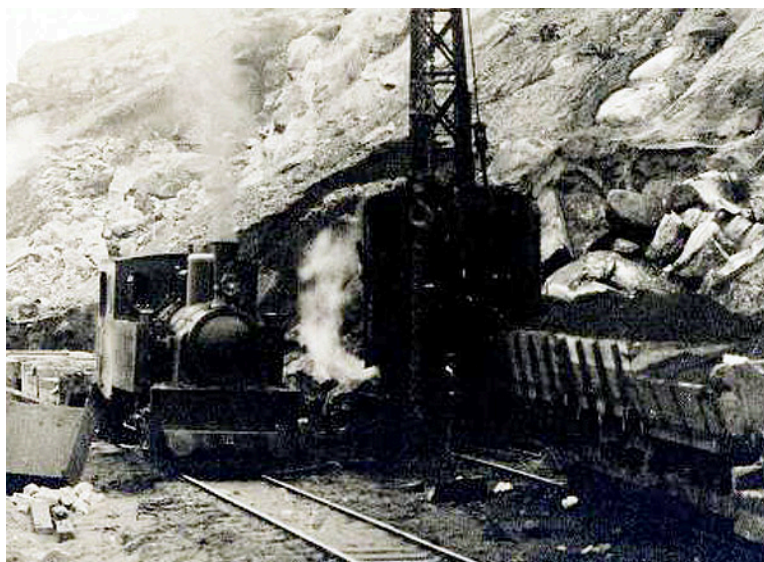
Metre gauge. The following locos were for a 'San Antonio' customer, but not confirmed to be in Chile. Photos show examples of these locos carrying large painted numbers 'No. 2' and 'No. 3'. There also appears to have been a 'No. 6'. However, that seems to have been of a different design, with a single cab-side opening without a glazed window.

0-6-0T d/w 800mm, cyls. 330x430mm, built by Henschel in 1912

?	w/n 11154
?	w/n 11155
?	w/n 11156



Photo from Pablo Moraga's collection.



See also 60 cm. gauge locos in sub-metric gauge file.

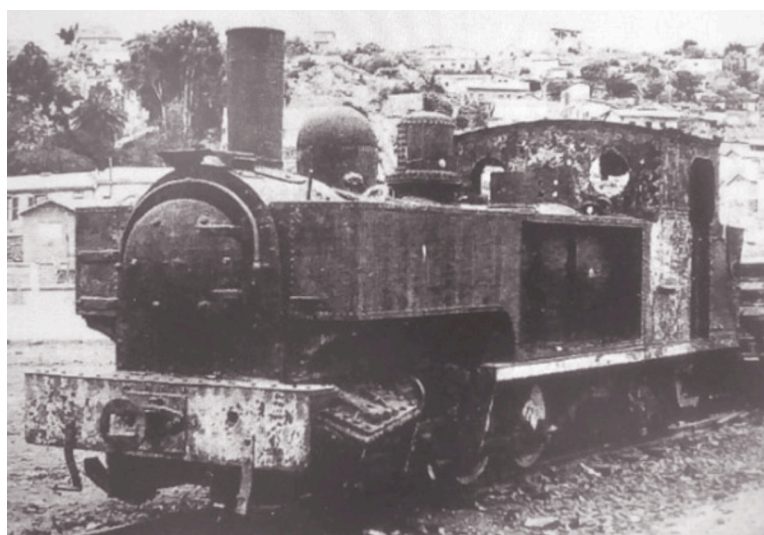
EmPorChi Puerto Coquimbo

Metre gauge port lines.

0-6-4T d/w ? cyls. ?, built by Hunslet in 1911

Ex *FCNC* and *Red Norte tipo F?*

? w/n 1065 or 1078? Identity surmised by Wilfred Simms in 1978 when loco was lying derelict.



El Puerto de Constitución

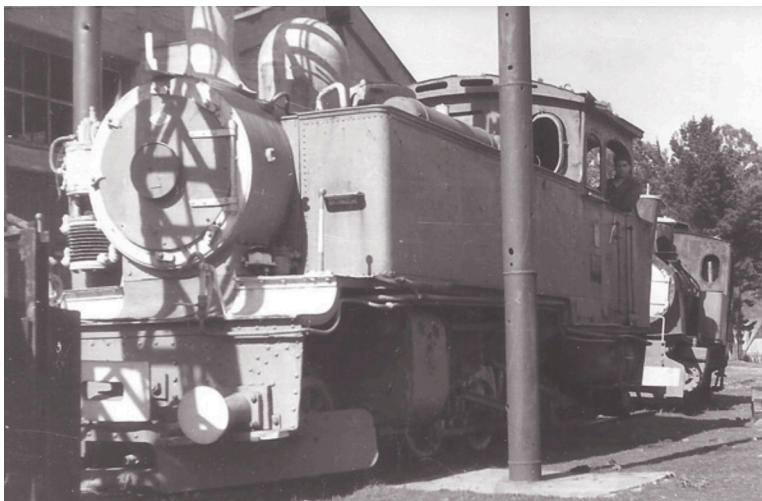
Metre gauge sidings from *EFE* line. A photo from 1970 shows one of the ex *Empresa Constructora del Puerto de Antofagasta* O&K 2-6-0Ts, and a smaller German-built loco. Note that the paper mill in Constitución had its own rail system but that this was possibly of 900mm gauge.

2-6-0T d/w 900mm, cyls. 400x450mm, built by O&K in 1926

There had been three of these at Antofagasta port, O&K numbers 10077-79, and one of them was seen in an O&K cat-

alogue bearing a cabside plate number **10**. However a photo of this one in Constitución shows that it bore the cabside number **1** at this location.

1 w/n ?



The 2-6-0T in the foreground is one of the O&Ks originally built for the port of Antofagasta, see above, but the smaller loco behind has not yet been identified. Note the added side buffers on the O&K.



This appears to be identical to the two Jung 0-4-0WTs built for the paper mill at Constitución to the gauge of 900mm. Further work is needed to clarify this.

Port of Iquique construction

Metre gauge. In the late 1920s the port of Iquique was re-fashioned by the construction of a causeway linking Isla Serrano to the mainland. The stone for this came from a large quarry at the foot of the mountain a kilometre or so to the east, and was being transported by metre gauge tracks some time before mainline metre gauge trains reached the town. The quarry site later became the location for the Maestranza El Colorado. So far no indication has been found that metre gauge operations continued once the construction work was over, nor any facts suggesting the sale of engines to other operators.

0-6-0T d/e 810mm, cyls. 350x400mm, built by Henschel in 1928

Ordered via Ph. Holzmann of Frankfurt. The photo below shows a label or plate on the tank inscribed 'Construct Iquique No. 3'. Strangely Jens Merte's Henschel list shows loco 21126 to have been built for a gauge of 1000mm, whilst the remaining five engines numbered 21127-31 were for the narrower gauge of 900mm.

1 w/n 21126

2 w/n 21127

3	w/n 21128
4	w/n 21129
5	w/n 21130
6	w/n 21131



Other unidentified locos

So far engines 7 to 11 have not been identified. However, the photo below shows another loco supposedly supplied to Iquique port, so it is possible that a batch of these filled the gap.



This loco also is supposed to have been built for the Iquique port works, but is so far unidentified. Given that we currently have no idea about fleet numbers 7 to 11, this might be one of them.

0-6-0T d/w 800mm, cyls. 400x400mm, built by Henschel in 1930

NB Jens Merte's Henschel list shows these engines as 'Bt' ie. 0-4-0T, but this is presumably a mistake.

12	w/n 21630
13	w/n 21631



Henschel builder's pic of no. **12**, from manufacturer's catalogue.

3.5.5 Other industrial locations

La Fabrica de cemento 'El Melón'

Background

Metre gauge. Located at La Calera. Line linking Mina Navio to the cement works. Also both metre and 60cm gauge in the mine. Opened 1906 [16].

0-4-0T d/w 30", cyls. 12"x14", built by Baldwin in 1915

BLW class number 4-18-C 110.

?

w/n 42866



2-6-2T d/w ? cyls. ?, built by Borsig in 1907 and 1931

One of the *EFE's* *tipo K* Borsig 2-6-2Ts was hired to Cemento Melon in 1930 before the company purchased a new engine to the same design.

EFE 3044

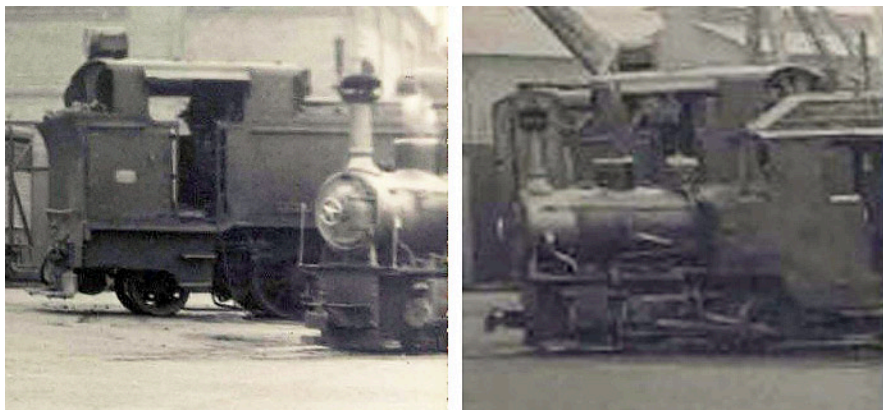
w/n 5896

Rented to *Fabrica de Cemento El Melón* in 1930 but returned in

1931.

?

w/n 14003 Purchased new in 1931.



These two images, found in a *Cemento Melón* album held in the *Archivo Fotográfico* of the *Biblioteca Nacional*, show two steam locos. The larger one is almost certainly the Borsig 2-6-2T, equivalent to the *EFE's* *tipo K*, built in 1931 and listed immediately above. There are three obvious differences from the *EFE* engines: there is a slight step in the running plate line immediately in front of the cab doorway, shunters' footsteps are fitted in place of cow-catchers, and there is an electric headlight on the cab roof. The smaller loco is a German-built machine probably of 60cm gauge, and is considered in the fourth volume of these lists, in section 4.9.3.

0-6-2T d/w 36", cyls. 15½"x20", built by Hudswell Clarke in 1906

? w/n 782 Purchased from *FCAB* in 1938. Had been *FCAB* no. **5** after 1908 renumbering.

La Sociedad Nueva Italia

Metre gauge. One locomotive was purchased around 1908 for the proposed railway from Los Sauces (Saboya) to Capitán Pastene, but was transferred with other materials to the *DOP* on the takeover of the project by the government around 1908, and the consequent change of gauge to 60cm. Brief correspondence is in *ArNAd* file [MOBR2116]. Then in 1909 the loco surfaces again, with correspondence in [MOBR2109] suggesting that it should be shipped to La Calera for erection, after which it would be used during construction towards Cabildo.

2-6-0 d/w ?, cyls. ?, built by Lima in 1908

‘NAHUEL BUTA’ w/n 1074 Passed to *DOP* before erection. See *DOP* and *EFE* lists for later history.

Señor Adolfo Moreno

Metre gauge. Activities and location unknown. Two unidentified locomotives purchased by the *EFE* in January 1920 from this seller, for \$(Pesos)11,000 each. These became nos. **59** and **60** in the *Red Sur* narrower gauges list, and therefore probably later became nos. **4059** and **4060**.

Señor Otto Haer (or Hear)

Metre gauge. One six-coupled O&K loco purchased by the government in 1917 from this seller, by Decree 375 of 31-12-1917. It had been engaged in construction work at San Antonio. The price was \$28,000, later reduced to \$20,000 Pesos plus \$1,300 for repairs [31 1918 p1175-6]. This became *Red Sur* loco **57**, and thus possibly later was renumbered **4057**. The source mentioned explained that owing to new routes coming into *EFE* service, such as San Felipe to Putaendo and Rancagua to Doñihue, there was a shortage of motive power.

There were in fact relatively few O&K metre gauge six-coupled locos for Chile. This machine could be O&K 4480 which was supplied to MacDonald Gibbs and MacDougall Chile in 1912, perhaps sold on after the end of a contract; or one of 5196-8 supplied to August Galtier of Paris for Chile in 1911, though I have speculated that they might actually have been 2' 6" gauge locos for use at the Corral iron works. No other obvious candidates stand out in the O&K list.

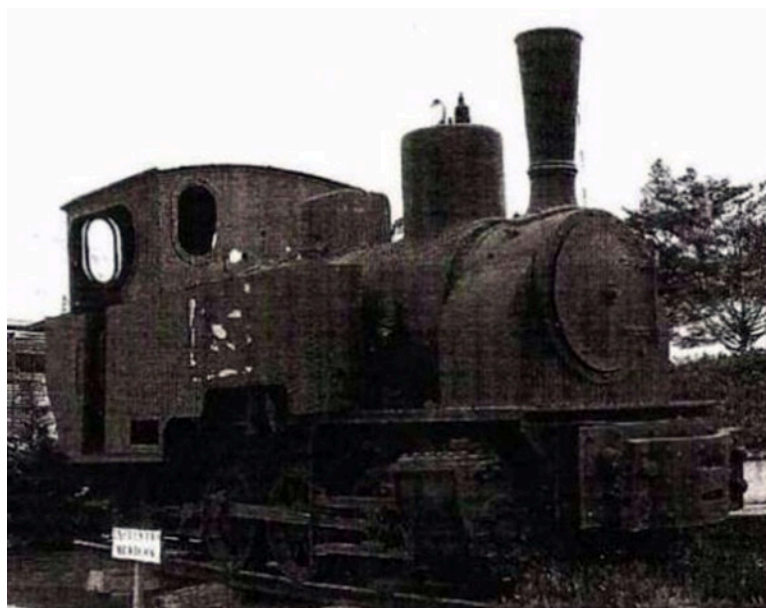
El Fundicion de Plata

Antofagasta, the site is now the location of the *Universidad Catolica del Norte*.

0-6-0T d/w ?, cyls. ?, built by O&K in 1910

? w/n 3948 80hp. Ex *Cía. de Salitreras de Antofagasta* 2' 6" gauge. Regauged to 1m. Preserved at *Universidad Catolica del Norte*, Antofagasta, which is on the site of the old *Fundicion de Plata* where the loco may have worked. See also the sub-metric gauge locos file for details of the 2' 6" gauge engines which

worked there.



Sociedad de Minas de Cobre de Chañaral

In 1918 this organisation complained to the government about the unsatisfactory service provided by the *Red Central Norte* on the Chañaral railway between Los Pozos and Chañaral. A request was made that they be permitted to run their own trains on this section of line [31, year 1918 p889]. This implies that they had their own locos. No further details are yet known.

Plinthed in Coquimbo

0-6-2T d/w ?, cyls. ?, built by Porter in 1907

The Porter 0-6-2T illustrated below has stood for many years at Coquimbo station. It is currently metre gauge, but Wilfred Simms suggested that it had originated on the 3' 6" gauge *FC de Carrizal*. Given that that railway was re-gauged to 1m. in the 1940s, this engine may have only worked on that gauge which would imply that it had an earlier owner somewhere else.

5	w/n 3856?	Connelly's Porter list says 3856 was an 0-4-0T that went to Sloss Sheffield Steel & Iron Co. in Birmingham Alabama. Preserved in Coquimbo, as possibly regauged to 1m.
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3.5.6 Agents for unknown customers

Matthews, Richards & Co.

Metre gauge. May have been agents. Destination in Chile unknown. Possibly to the *FC de Elqui* or to a connected industrial user, though neither loco appears on that railway's fleetlists.

0-4-0ST d/w 24" cyls. 6½x12" built by Black Hawthorn in 1882

? w/n 669

? w/n 671 Later with *DOP* under name of 'VICTORINO A. LASTARRÍA'?

Messrs. Strain & Robertson of Glasgow

In 1920 S&R invited selected manufacturers including Manning Wardle to tender for the supply of a new or second-hand loco to burn coal or oil, about 25/30 tons and for gauge 1m. This may well have been for a nitrate *oficina* but the actual customer is unknown.

Mitrovich Bros., engineers, Liverpool and Chile

Metre gauge. Probably for nitrate *oficinas*, a number of which Mitrovich Bros. had built for various customers..

0-4-0ST d/w 33¼" cyls. 10x15", built by Bagnall in 1908

Spec says outside cyls., inside frames, and open back cab. Completed 30-05-1908. Cost £682, customer charged £750. No name or number. Built as 'Phillis' type to Bagnall 1829 drawings. Shipped via Liverpool to Iquique.

? w/n 1883

0-4-2T d/w ? cyls. 12x16", built by Kerr Stuart in 1919

'Huxley' type locos. Built for oil firing. Eventually at Antofagasta port, see above under *EmPorChi*.

1 w/n 4071

2 w/n 4072

3 w/n 4073

4 w/n 4074

5 w/n 4075

6 w/n 4076

7 w/n 4077

3.6 Unidentified metre gauge locos

Most of these will have been for industrial users.

Baldwin

w/n 14474, 1895, for Tomas Stillman, Chile, d/w 35", cyls. 9x16" for Talcahuano, Chile. Possibly for the *Apostadero Naval dique seco* construction line covered in section 3.3.6.

Borsig

w/n 5366-7 of 1904 Bn2t, Griesse of Hamburg for Chile '1' and '2'.

w/n 5573-4 of 1905, Bn2t Griesse Hamburg for Chile.

w/n 5685 of 1905 Bn2t, Griesse Hamburg for Chile.

w/n 6676-7 of 1907-8 Bn2t, Gleisner Hamburg for Chile.

w/n 6782 of 1908, Bn2t, H. Folsch & Co. Hamburg for Chile.

w/n 6783 of 1908, Bn2t, H. B. Slomann & Co. Hamburg for Chile.

w/n 6922 of 1908 Bn2t, Folsch & Co Hamburg for Chile.

w/n 7963 of 1911, Bn2t, H. Folsch & Co. Hamburg for Chile.

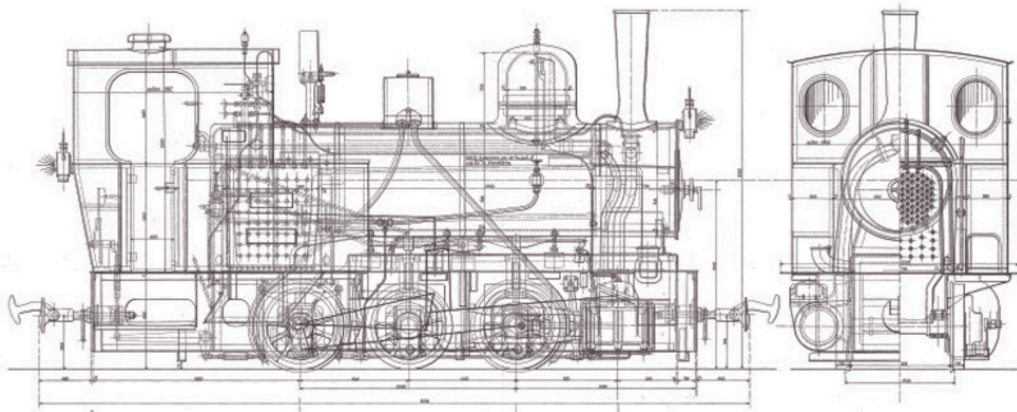
w/n 8235 of 1911, Bn2t, H. Folsch & Co. Hamburg for Chile.

w/n 8977 of 1914, Bn2t, H. Folsch & Co. Hamburg for Taltal Chile.

Henschel

w/n 7606 of 1906, Bn2t, for M. Samuel & Co. of London for Chile.

w/n 12906 Ct 1914, for Antofagasta.



Drawing is available from <https://www.henschel-museum.com/>

w/n 20302 of 1924, C1, Gebr. Vorwerk for Chile. Probably d/w 860mm, cyls. 340x430mm. One Henschel metre gauge 0-6-2T for Chile had d/w 860mm and cyls. 340x430mm with oil firing.

w/n 20747 of 1926, 2-8-2T, via Th. Wille of Hamburg.

w/n 20982 of 1928 Bt, for Antofagasta. Claus Gaertner says this was a boiler for India.

w/n 21014 for *Cia. Salitrera Nueva* of Chile, of *FCAB*. via Gebr. Vorwerk & Co. Hamburg. C1'n2t. Has this got muddled with the 2' 6" gauge 0-6-2T for *Cia. Salitrera Nueva Castilla*?

O&K

w/n 5824 of 1912, 10hp, Bt, W. Weddell & Co., for Chile. See *Frigorífico Puerto Sara*, in section 3.3.6.

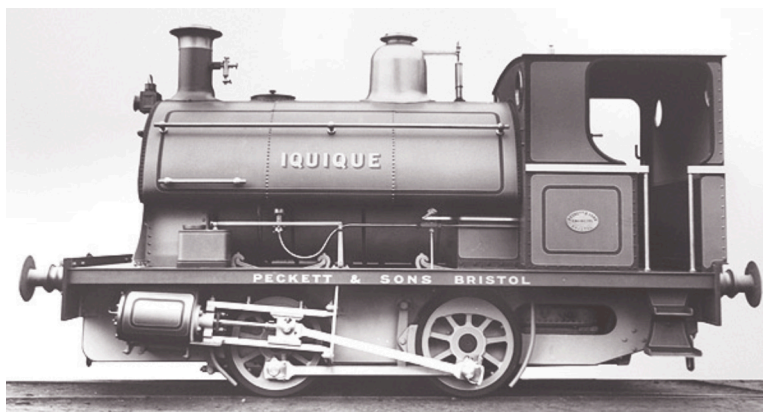
w/n 6962 of 1913, Bt, Duncan Fox, Patagonia. Preserved PA.

w/n 9394 of 1921, Ct, Gildemeister & Co. Valparaiso. Later to *Area Tissue SA*, Puente Alto, where preserved but now 60cm gauge. Gildemeister ran the nitrate *oficinas Peña Chica, San Jose* and *San Pedro*.

w/n 11391-2 of 1927, 3/4t metre gauge, "Baurizza & Co. Chile", probably Baburizza & Co.

Peckett

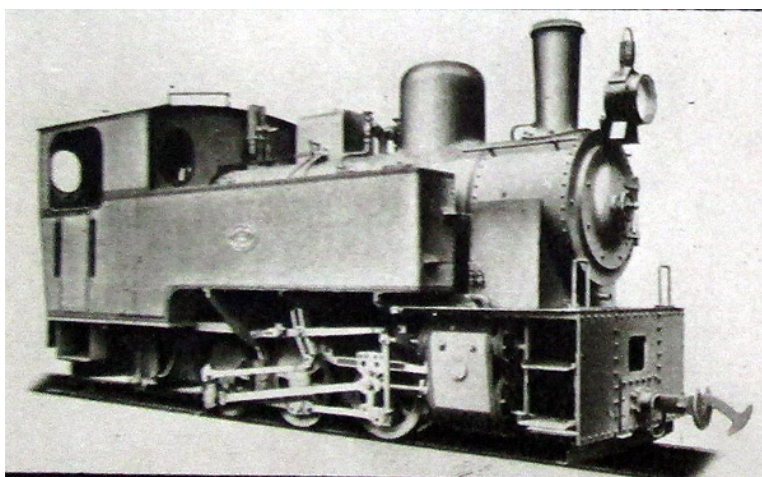
0-4-0ST oc, no. 1145 of 1907, d/w ? cyls. 7x?", for Iquique via E. F. Clarke. The photo below, from the NRM in York, probably shows this loco. The side buffers would be unusual for a metre gauge railway system but I can see no other loco in the Peckett list that might have been named **'IQUIQUE'**.



Porter

w/n 4242 and 4243, built late 1908, 2-4-0, first one had 5" x 10" cylinders. 2nd loco had 10.375 x 10" cyls. Supplied to Ingersoll Rand Co. Possibly compressed air locos for work on the summit tunnel of the *Trasandino*.

Unidentified Henschel photos, delivered to Chile



Henschel builder's photo, from 1931 Henschel catalogue.

3.7 Appendices

3.7.1 Appendix 1: Maestranza Coquimbo loco allocation and usage 1905-1907

No. and name	Gauge	Loco type		Days in steam & kilometres run		Present in 1907
				1905	1906	
1 ‘COQUIMBO’	Broad	<i>FCC</i> Avonside 4-4-0	120	15,289	132 22,271	Yes
2 ‘ANDACOLLO’	Broad	<i>FCC</i> Avonside 4-4-0	142	16,595	144 16,871	Yes
3 ‘Las CARDAS’	Broad	<i>FCC</i> Avonside 4-4-0	131	16,335	186 22,864	Yes
4 ‘La SERENA’	Broad	<i>FCC</i> Avonside 2-6-0T	180	24,350	189 24,417	Yes
5 ‘La COMPAÑÍA’	Broad	<i>FCC</i> Avonside 2-6-0T	195	25,719	187 26,231	Yes
6 ‘PANULCILLO’	Broad	<i>FCC</i> Avonside 2-6-0	128	15,470	108 13,265	Yes
7 ‘OVALLE’	Broad	<i>FCC</i> Avonside 2-6-0	68	10,709	118 15,370	Yes
8 ‘La HORMIGA’	Broad	<i>FCC</i> Avonside 2-6-2T	291	25,737	281 24,004	Yes
9 ‘La ABEJA’	Broad	<i>FCC</i> Avonside 2-6-2T	150	13,203	197 14,200	Yes
10 ‘EMPRESA’	Broad	<i>FCC</i> Avonside 2-6-2T	223	43,724	243 33,631	Yes
11 ‘CONSTANCIA’	Broad	<i>FCC</i> Avonside 2-6-2T	220	40,991	248 42,776	Yes
12 ‘VENCEDORA’	Broad	<i>FCC</i> Avonside 2-4-0T	176	18,237	237 45,838	Yes
13 ‘PORVENIR’	Broad	<i>FCC</i> Avonside 2-4-0T	224	31,477	113 10,261	Yes
– ‘TETERA’	Metre	Neilson 0-4-0T	78	4,670	132 9,361	Yes
– ‘EI MOLLE’	Metre	Neilson 2-4-0T	269	23,081	230 11,952	Yes
– ‘LASTARRIA’	Metre	Black Hawthorn 0-4-0ST			8 607	No
– ‘MANUEL A. MATTÁ’	Metre	Corpet 0-6-0T			92 8,158	Yes
– ‘ELQUI’	Metre	<i>FCE</i> Black Hawthorn 4-6-0	201	19,279	38 3,156	No
14 ‘VICUÑA’	Metre	Borsig 2-6-0?			43 4,898	Yes
15 ‘MARQUESA’	Metre	Borsig 2-6-2T			29 3,854	Yes
16 ‘ALTOVALSOL’	Metre	Borsig 2-6-2T			45 4,566	Yes
23 ‘FEDERICO ERRÁZURIZ’	Metre	Lever Murphy 4-6-0	132	18,884	182 25,155	Yes
26 ‘JUAN M. SIMPSON’	Metre	Lever Murphy 4-6-0	233	28,440	192 24,928	Yes
29 ‘JULIO BAÑADOS ESPINOSA’	Metre	Lever Murphy 4-6-0	91	12,164	238 27,354	Yes
31 ‘GUILLERMO MATTÁ’	Metre	Lever Murphy 4-6-0	258	31,008	115 14,471	Yes
32 ‘FERNANDO LAZCANO’	Metre	Lever Murphy 4-6-0	114	14,458	212 22,552	Yes
– ‘D. V. SANTA MARÍA’	Metre	St. Leonard 0-6-0T	116	24,761	151 11,714	Yes
– ‘RICARDO CUMMING’	Metre	St. Leonard 0-6-0T	65	9,000	36 3,483	Yes
– ‘RIVADAVIA’	Metre	<i>FCE</i> Black Hawthorn 4-6-0?	113	11,422	264 38,528	Yes
– ‘URMENETA’	Metre	<i>FCE</i> Black Hawthorn 4-6-0?	175	21,032	98 12,243	Yes

The 1905 and 1906 lists were dated 25th January 1907 from Coquimbo, and signed by Tomás Cuthbert (?) *Jefe de Maestranza*. Found in files MOBR3079 and MOBR1910 [47].

Whilst most locos listed here can easily be identified, the names ‘RIVADAVIA’, ‘URMENETA’ and ‘VICUÑA’ have not so far been pinned down definitely. It is certainly possible that the first two were the remaining two ex *FC de Elqui* 4-6-0s by Black Hawthorn (similar to no. 1 ‘ELQUI’). No. 2 ‘La SERENA’ might well have been renamed ‘URMENETA’ as there was already a broad gauge *FC de Coquimbo* loco named ‘La SERENA’, whilst no. 3 ‘La RIVADAVIA’ might merely have lost its number and the definite article at the beginning of its name.

Another source anecdotally tells that there had been an engine at Coquimbo named ‘La PULGA’ (the flea) as well as those named above as ‘La HORMIGA’ (the wasp) and ‘La ABEJA’ (the bee). There are at present no clues as to

what type of loco this was, but it was said *“Esta última, de pequeño tamaño, trasladó estudiantes entre la ‘Estación vieja’ y el empalme hasta 1926”*. If true, then it must have been a metre gauge loco as the broad gauge in Coquimbo finished around 1916-1917.



Coquimbo port station yard in mixed gauge days, with the loco shed over to the right.
It would be good to find a better shot of this scene. The crowded nature of the site explains why the maestranza eventually moved to Ovalle.



This earlier scene, in broad gauge days, was taken from a few yards further south

than the other. The curved roof shed in the foreground was lower right in the previous photo, and whilst the main works on the right had survived it had gained pitched-roof sheds in front of it in later days.

3.7.2 Appendix 2: Accidents on the FCTC in late 1910

This report was compiled after a series of serious accidents to trains on the *FC Trasandino* during the later months of 1910. This was only a few months after the completion of the international link through the summit tunnel. The original document was found in file MOBR2417 at the *Archivo de la Administración* in Santiago, but is also available at https://www.archivonacional.gob.cl/616/articles-72141_archivo_01.pdf

Santiago, Noviembre 24 de 1910:

SEÑOR MINISTRO:

El Interventor del FC Trasandino por Juncal don Raimundo del Rio se comunicado a US, el accidente ocurrido en ese ferrocarril el dia 15 del presente, i llamas especialmente la atencion de US. hacia la gravedad de la suspension del tráfico en una época en que hai los inconvenientes de la nieve ni otro alguno: Termina pidiendo que US. se sirva ordenar una visita de inspeccion técnica a dicho ferrocarril.

The Government Inspector for the *FC Trasandino via Juncal*, don Raimundo del Rio, has advised you of the accident which occurred on that railway on the 15th day of the present month and draws special attention to the seriousness of the suspension of traffic at a time when there was the inconvenience of snow among other things. He ended by suggesting that you order a technical inspection visit to that railway.

Por oficio No. 4400 US. tuvo a bien designarnos para informarle sobre esta materia i por las instrucciones recibidas de US, la visita que hemos efectuado en las dias 18, 19 i 20 del corriente al FC Trasandino se concretó no solo a averiguar las causas del accidente ocurrido acaecido el dia 15 del corriente, sino tambien a determinar las eventualidades a que está sujeto el tráfico de esa línea por su dotacion i organizacion.

By your official letter No. 4400 you saw fit to appoint us, and by your instructions to report to you on this matter. The visit, which we carried out on 18, 19 and 20 of the current month, to the *FC Trasandino*, was arranged not only to investigate the causes of the accident of 15 of the current month, but also to determine the conditions of the traffic of that line due to its staffing and organisation.

Desgraciadamente los defectos de toda indole que nos ha sido dado constatar, nos han demostrado que la explotacion del FC Trasandino atravieza por una situacion mui peligrosa, no solo para el mantenimiento del tráfico al cual está ligado un alto interes público, sino tambien para la seguridad de las vidas de los pasajeros que se confian en la vigilancia que a la explotacion de este ferrocarril debe prestarle el Supremo Gobierno:

Unfortunately, the defects of all types, of which we have become aware, have shown that the working of the *FC Trasandino* is experiencing a very dangerous situation, not only for the maintenance of the traffic associated involving a strong public interest, but also for the safety of the lives of the passengers, who rely on the supervision which the Supreme Government should exercise over the operation of this railway.

La alarma del Interventor del Trasandino don Raimundo del Rio ante los repetidos accidentes ocurridos en el último tiempo queda plenamente justificada por los hechos, i en vista de la verdadera urgencia que hai para evitar, si aun es tiempo, nuevas desgracia, hemos creido necesario adelantar

The alarm of the Government Inspector of the *FC Trasandino*, don Raimundo del Rio, about the repeated accidents which have occurred in recent times, is fully justified by the facts, and in view of the great urgency which there is to avoid, if there is still time, more accidents, we believe it is necessary...

Señor Ministro de Industria i Obras Públicas
Minister of Industry and Public Works,

a US. este informe preliminar que permitirá a US. ordenar las medidas mas indispensables para garantizar la seguridad

de los pasajeros i del personal.

to forward to you this preliminary report, which will allow you to order the measures most necessary to guarantee the safety of the passengers and staff.

Los hechos principales que han dado origen a nuestra visita son los accidentes ocurridos el 20 de setiembre i el 15 de noviembre último que pasamos a describir.

The main events that have given rise to our visit are the accidents that occurred on the past September 20 and November 15 which we will go on to describe.

Accidente del 20 de setiembre.

Accident of September 20th.

La máquina de cremallera no. 10 bajaba de Portillo con un tren de 5 carros rejas i tres carros de pasajeros cuando al llegar al kilómetro 56 reventó el unico perno de los cañones de admision de vapor a los cilindros de cremallera: el maquinista al notar el escape abundante de vapor por la chimenea i sin darse cuenta la gravedad del accidente ha aplicado el freno de aire, sin conseguir moderar la velocidad, ha aplicado enseguida el freno a mano que obra sobre el piñon de la cremallera lo que ha producido la ruptura de los dientes del piñon: la velocidad adquirida finalmente ha producido el descarrilamiento de todo el tren que ha caido al costado del terraplen de una altura de 10 metros produciendo la muerte del maquinista i la destruccion casi completa del tren.

The rack locomotive No. 10 came down from Portillo with a train of five cattle wagons and three passenger coaches. When it reached Km 56, the only bolt of the steam intake pipes to the rack cylinders broke. The driver, noticing the abundant escape of steam through the chimney, without realizing the severity of the accident, applied the air brake, but was unable to moderate the speed. He then immediately applied the handbrake that works on the pinion of the rack which resulted in the breaking of the teeth of the pinion. The acquired speed finally resulted in the derailment of the entire train, that fell from the side of the embankment from a height of 10 meters, resulting in the death of the driver and the almost complete destruction of the train.

Las diferentes fases de este accidente han quedado mas o menos establecidas.

The different phases of this incident have been more or less established.

Causas del accidente del 20 de setiembre.

Causes of the accident of September 20th.

La causa orijinal se debe exclusivamente a un vicio de construccion como tendremos oportunidad de estudiarlo en detalle en un informe mas estenso que elevaremos a US. pero la gravedad que alcanzó el accidente se debe a causas preexistentes i que subsisten aun en el FC Trasandino: la deficiencia en las instrucciones que reciben los maquinistas, la falta de preparacion de estos i otras mas que apuntaremos i esplayaremos mas adelante por ser comunes a ambos accidentes.

The original cause is solely due to a construction defect, which we will have the opportunity to study in detail in a more extensive report, and which we will present to you, but the severity of that accident is due to pre-existing causes that still exist in the *FC Trasandino* – the deficiency in the instructions that the drivers receive, the lack of preparation of these, and of others which we will point out and we will elaborate upon later because they are common to both accidents.

Accidente del dia 15 de noviembre.

Accident of November 15.

La máquina no. 7 salió de Río Blanco a las 5.30 AM con un tren de carros rejas vacios: llegar cerca de km. 37

Locomotive no. 7 left Rio Blanco at 5.30 AM with a train of empty cattle wagons. It arrived near km. 37

i estando el tren en gradiente de 8% de cremallera el maquinista notó que se escapaba abundantemente el vapor del cilindro posterior derecho de cremallera: sobre andando se bajó de la máquina para examinar la causa cuando notó que el tren se detuvo i principiaba a recular: subió inmediatamente i aplicó el freno de aire sin conseguir detener el tren: así ha corrido unos seicientos metros hasta que por la velocidad adquirida los cilindros i las diferentes piezas han saltado i el piñon se ha montado sobre los dientes de la cremallera destruyendo esta en una estension de cuatrocientos metros: las ruedas posteriores de la locomotora de descarrilaron parando el movimiento del tren. Felizmente no hubo pérdidas de vida pero la maquina ha quedado inutilizada por unos dos meses, tiempo minimum en que se hará la compostura.

and when the train was on a gradient of 8% [1 in 12½] rack, the driver noticed that abundant steam was escaping from the right rear rack cylinder. He got off the loco to examine the cause, whereupon he noticed that the train had stopped and had begun to go backwards. He immediately got back on, and applied the air brake, which did not stop the train. It ran about six hundred metres until the speed which the cylinders reached caused jerks in different parts of the mechanism and in the pinion mounted on the teeth of the rack, destroying it over a length of four hundred metres. The rear wheels of the locomotive derailed, stopping the train. Fortunately there were no loss of life, but the engine has been rendered useless for about two months, the least time in which the repairs can be carried out.

No nos ha sido posible descubrir la causa orijinal del accidente, es decir, el escape de vapor por el cilindro que motivó la bajada del maquinista: el maquinista cree que el cilindro se rompió, mientras que el jefe de Taller dice que ha sido solamente una quebradura del grifo purgador del cilindro. Cualquiera que haya sido la causa del escape de vapor es evidente que si el maquinista hubiese detenido la locomotora antes de bajar a revisar la avería esta no habria alcanzado las proporciones que tomó i se habria evitando tanto la destruccion del mecanismo como el grave peligro en que estuvo el personal del tren.

It has not been possible for us to discover the original cause of the accident, that is, the escape of steam through the cylinder that caused the driver to get off. The driver believes that the cylinder broke, while the Head of Workshops says that it was only a breakage of one cylinder drain cock. Whatever the cause of the steam escape, it is clear that if the driver had stopped the engine before getting down to check the fault, the accident would not have reached the proportions that it did, and would have avoided both the destruction of the mechanism and the serious danger into which the train crew were placed.

La ignorancia que ha manifestado el personal de los trenes en ambos accidentes no puede comprenderse sino por un vicio grave en la administracion del Ferrocarril: las instrucciones que se dan a los maquinistas para su gobierno son mui deficientes, asi, no hai ninguna cláusula que prohíba que el maquinista i fogonero abandonen la locomotora estando esta en movimiento, ni nada que les indique la forma en que deben usarse los diversos frenos de la locomotora de cremallera.

The ignorance that the train personnel have demonstrated in both accidents cannot be interpreted as other than a serious omission of the management of the railway. The instructions given to the drivers for their regulation are very deficient. There is no clause that prohibits the driver and fireman leaving the locomotive while it is in motion, or anything that indicates the way in which the various brakes of the rack locomotive should be used.

De esta falta de instrucciones, de la carencia de personal bien preparado para las locomotoras de cremallera, de la falta de interes que tiene el maquinista en la conservacion de las diferentes locomotoras que pasan sucesivamente por sus

From this lack of instructions, from the lack of well-trained personnel for rack locomotives, from the lack of interest that the driver has in the maintenance of the different locomotives that pass successively through their

manos, resulta que en la actualidad el tráfico en el FC Trasandino se hace mui peligroso para los pasajeros que con-

fian sus vidas en tales manos.

hands, means that, at present, the traffic on the *FC Trasandino* has become very dangerous for passengers who trust their lives with such hands.

No dudamos que las medidas de urgencia que para salvar este estado de cosas proponemos al final de este informe conseguirán suprimir los graves accidentes que hai que temer con el actual régimen; pero, ademas, nos ha sido posible constatar que la permanencia del tráfico se hace mui difícil, sino imposible, con la actual dotacion de locomotoras i de maquinaria de maestranza.

We do not doubt that the urgent measures, which we propose at the end of this report in order to rectify this state of affairs, will succeed in avoiding the serious accidents which have to be feared with the current regime but, in addition, it has been possible for us to verify that the continuance of traffic is very difficult, if not impossible, with the current provision of locomotives and workshop equipment.

El número de locomotoras es 9 en la actualidad: de estas hai dos por adherencia que pueden considerarse como locomotoras de maniobra; las otras 7 son de cremallera de distintos tipos lo que hace apenas 1 locomotora por 10 kilómetros de línea.

The number of locomotives is nine at present: of these there are two that are adhesion only and can be considered as shunting locomotives. The other seven are of different types of rack engine, which only makes one locomotive for each 10 kilometres of line.

Esta proporcion no seria pequeña en una línea de adherencia de igual tráfico, pero como en realidad la línea por sus gradientes equivale por lo menos a una longitud doble de la que tiene se reduce la proporcion a una cantidad insuficiente. Ademas hai que tomar en cuenta que cada locomotora de cremallera especialmente las locomotoras Kitson en uso en el Trasandino, necesitan para su reparacion i visita periódica tres i cuatro veces mas tiempo que una locomotora de adherencia, tanto por la multiplicidad de sus órganos, su posicion incómoda para el trabajo como por el trabajo forzado con presiones de vapor mui subidas,

This proportion would not be small on an adhesion line with similar traffic, but in reality the line, because of its gradients, is equivalent to at least double the length, whereby the availability of motive power is reduced to an insufficient amount. In addition, it must be taken into account that each rack locomotive, especially the Kitson locomotives in use on the *Trasandino*, need three to four times longer than an adhesion locomotive for repair and periodic maintenance, as much for the multiplicity of its elements, and their inconvenient working locations, as the demanding work with very high steam pressures,

Como consecuencia de este estado de cosas, el dia de nuestra visita solo había en servicio tres locomotoras de cremallera, de las otras cuatro, dos están inutilizadas por los accidentes, uno en visita periódica en el Taller i la otra ha sido destinada a hacer el servicio en adherencia solamente entre Los Andes i Río Blanco. En estas condiciones las visitas i reparaciones de las locomotoras se hacen en forma mui deficientes. Hai otras consideraciones que exigen como medida imprescindible el aumento del poder locomotor. pero que por ser de carácter técnico dejaremos

As a result of this state of affairs, on the day of our visit there were only three rack locomotives in service, of the other four, two were disabled by accidents, one was on a regular visit to the workshop and the other has been allocated to the adhesion service between Los Andes and Río Blanco. Under these conditions, the maintenance visits and repairs of the locomotives are carried out very inadequately. There are other considerations that require as an essential measure is an increase in motive power, but being of a technical nature we will leave them

para el informe mas detallado que nos proponemos elevar a US.

until the more detailed report that we propose is presented to you.

La dotacion de maquinaria de la maestranza necesita tambien un aumento en correlacion con el número de locomo-

toras necesarias i con el carácter especialísimo de las maquinas de cremallera.

The provision of machine tools of the workshops also needs to be increased, in step with the number of locomotives needed, and with the very special characteristics of the rack locomotives.

MEDIDAS DE URJENCIA PARA LA SEGURIDAD DEL TRAFICO.—

URGENT MEASURES FOR TRAFFIC SECURITY.—

1o. La Empresa del FC Trasandino debe proceder a la brevedad posible a confeccionar un reglamento impreso para los maquinistas; incluirán en caracteres gruesos las instrucciones para el uso de los frenos en los diferentes casos de accidente que puedan presentarse; el modo de efectuar reparaciones ligeras i de seguir la marcha hasta la próxima estacion en caso de ruptura de algun órgano: la prohibicion absoluta para el maquinista de abandonar la locomotora sin detener i asegurar el tren.

1st. The *FC Trasandino* company must proceed, as soon as possible, to prepare printed regulations for the drivers; they will which in bold characters the instructions for the use of the brakes in the different accident situations that may arise; the methods of making minor repairs and of proceeding to the next station in case of breakage of any part, and an absolute prohibition on the driver leaving the locomotive without stopping and securing the train.

Este reglamento debe ser comunicado al Gobierno para su revision, pero se pondrá en vijencia inmediatamente que sea confeccionado,

These regulations must be communicated to the Government for review, but should be put into effect immediately after they have been made.

2o.— Las instrucciones para el uso de frenos en caso de accidente se colocarán en caracteres bien visibles en la casucha del maquinista.

2nd.- The instructions for the use of brakes in the event of an accident shall be displayed in the driver's cab in characters that are clearly visible.

3o.— El personal de maquinistas i fogoneros deberá ser instruido prácticamente en el uso de los frenos: al efecto los maquinistas en servicio actualmente i los que en adelante entren al servicio deberán ser sometidos a un exámen práctico ante el Jefe de Talleres del Trasandino i un Delegado del Gobierno, del cual se dejará constancia por medio de un certificado i de un libro de actas de exámen, tenido por el Jefe de Talleres.

3rd.- The personnel involving drivers and firemen must be practically instructed in the use of the brakes. To this end, the drivers currently in service, and those who henceforth enter the service, must undergo a practical examination before the Head of the *Trasandino* workshops, and a Government representative, which will be recorded by means of a certificate and a book of exam results, held by the Head of Workshops.

4o.— Cada maquinista deberá ser destinado a una sola locomotora, deberá trabajar en los talleres cuando la máquina entre a limpiarse o a repararse i en jeneral deberá imponerse de todos los defectos de construccion de sus locomotoras. A fin de que se tenga presente esta clausula, se debe proceder a gravar el nombre del maquinista i del fogonero i la fecha de hacerse cargo de la máquina.

4th.- Each driver must be assigned to a single locomotive, must work in the workshops when the locomotive enters to be cleaned or repaired, and in general, must be responsible for all construction defects of their locomotives. In order to keep this clause in mind, the name of the driver and fireman and the date of taking over the machine must be recorded.

El nombre del maquinista i la fecha de hacerse cargo de la locomotora se pintarán en la casucha del maquinista.

The name of the driver and the date of taking over the locomotive will be painted in the driver's cab.

5o.— No se derogará esta medida sino en caso de enfermedad que imposibilite al maquinista por mas de dos dias, i en

tal caso el maquinista que lo reemplaza deberá poseer el certificado previsto en el artículo 3o.–

5th.– This rule will not be suspended, except in case of illness that incapacitates the driver for more than two days, and in that case the replacement driver must have the certificate as provided for in Article 3.-

6o.– Mientras se llevan a cabo las medidas anteriores las locomotoras en servicio de trenes de pasajeros entre Río Blanco i Caracoles llevarán ademas del maquinista i fogonero al inspector de maquinas del FC Trasandino con instrucciones especiales para el caso de accidente.

6th.– While the previous measures are being brought into force, locomotives on passenger trains between Río Blanco and Caracoles will also carry, in addition to the driver and fireman, the loco inspector of the FC Trasandino with special instructions for dealing with an accident.

7o.– Todos los trenes llevarán un teléfono portátil para pedir auxilios en caso de necesidad.

7o.– All trains will carry a portable telephone to ask for help if necessary.

MEDIDAS PARA LA PERMANENCIA DE LA ESPLOTACION.–

MEASURES FOR THE PERMANENCE OF THE OPERATION.-

La serie de accidentes ocurridos i el estudio de sus causas prueba hasta la evidencia que las locomotoras dejan los talleres sin ser revisadas en debida forma, lo que manifiesta la escasez de equipo motor para hacer el servicio actual que solo es de dos trenes diarios en cada direccion.

The series of accidents that have occurred, and the study of their causes prove the evidence that locomotives leave the workshops without being properly maintained, which shows itself in the shortage of motive power to run the current service, which is only two daily trains in each direction.

Se comprende que son dos máquinas inutilizadas, las otras en servicio tendrán que soportar mas rudamente las consecuencias de esta falta.

It is understood that with two machines out of service, the others in service will have to cope more harshly with the consequences of this lack.

Si se considera que el tráfico del ferrocarril deberá experimentar un gran incremento gracias a las tarifas mas racionales que no dudamos rejirán en poco tiempo mas, el número de locomotoras se hará mas i mas deficiente hasta el punto de paralizar todo el tráfico por su destruccion rápido.

If it is considered that railway traffic should undergo a large increase thanks to the more rational rates, which we do not doubt will be in effect shortly, the number of locomotives will become more and more deficient to the point of stopping all traffic due to their rapid destruction.

Creemos por lo tanto que para cumplir con el inciso 8o. del artículo 20 de la lei de policia de ferrocarriles, la Empresa del Trasandino por Juncal deberá adquirir: LOCOMOTORAS;– 3 locomotoras de cremallera del tipo Esslingen, con las alteraciones que indicaremos en nuestro informe detallado.

We believe therefore that to comply with Subsection 8, Article 20 of the regulation of railways law, the Juncal Trasandino company must acquire: LOCOMOTIVES; - 3 rack locomotives of the Esslingen type, with the alterations that we will indicate in our detailed report.

Las locomotoras de adherencia tipo Mallet o otro tipo de adherencia total – adecuada, ademas de estas adquisiciones las locomotoras nos. 7, 8, i 9 tipo Kitson debería ser reformadas si es posible suprimiendo los cilindros de cremallera superior i aumentado el diametro de los cilindros posteriores de cremallera.

Adhesion locomotives of the Mallet type, or other type, of adequate total adhesion. In addition to these acquisitions, locomotives nos. 7, 8, and 9 of the Kitson type should be rebuilt, if it is possible, to remove the upper rack cylinders

and increase the diameter of the rear rack cylinders.

Muchas de las piezas de las locomotoras Kitson i Esslingen no pueden ser reparadas con la maquinaria que actualmente hai en la maestranza: esta deficiencia unida a la escasas de locomotoras exige el trabajo extraordinario de los operarios lo que se traduce en un aumento enorme de los gastos de conservacion.

Many of the parts of the Kitson and Esslingen locomotives cannot be repaired with the machinery that is currently available in the workshops. This deficiency, linked to the lack of locomotives, demands extraordinary effort from the workshop staff, which translates into an enormous increase in maintenance expenses.

Por este motivo creemos indispensable que se adquiriera para los talleres de Los Andes las siguientes maquinas:
For this reason we believe it is essential that the following machines be acquired for the Los Andes workshops:

Una acepilladora de 20" (shaper)

Un taladro radial con ??? de 60"

Una acepilladora de 4' x 4' x 12' con dos porta herramientas

Un torno de centro de 12" para émbolos, etc.

Un torno de barras Herbert.

Una fresadora universal, Beyer Peacock i Co.

Un martinete a vapor

Rodillos para encorvar planchas de 1" x 8'

A 20" plane, made by Shaper

A radial drill with a 60" arm

A 4' x 4' x 12' plane with two tool holders

A 12" centre lathe for pistons, etc.

A capstan turret lathe, made by Herbert

A universal milling machine, made by Beyer Peacock & Co.

A steam hammer

Rollers for bending 1" x 8' plates

Despues de haber espuesto a US. las medidas que estimamos indispensables para regularizar el servicio del Trasandino, réstamos sólo dejar constancia de que la urgencia que hai en llenarlas nos ha impedido hacer un informe bien detallado: pero como el problema de la explotacion de líneas de cremallera tiene una importancia considerable nos proponemos consignar detenidamente las observaciones que hemos recojido en un informe posterior que tendremos el honor de elevar a US.

After having presented you with the measures which we consider indispensable to regularise the Trasandino service, we need only to record that the urgency, which has been needed to prepare them, has prevented us from making a very detailed report, but since the problem of the operation of rack lines is of considerable importance, we intend to carefully record the observations which we have gathered in a later report that we will have the honour of presenting to you.

Dios gue. a US.

May God care for you

Juan E Cerda, Julio Lyon

Selected pages from other documents on this topic:

II.– INSTRUCCION DEL PERSONAL DE MAQUINISTAS.–

II.– INSTRUCTION OF THE LOCO DRIVERS

Como lo haciamos presente en nuestro informe preliminar, estimabamos que en gran parte los accidentes ocurridos

han sido causados por ignorancia de los maquinistas, atribuible tanto a la falta de instrucciones impresas bien precisas sobre sus deberes como a la complicacion de las máquinas.

As we set out in our preliminary report, we consider that, in large measure, the accidents that have occurred, have been caused by ignorance of the drivers, attributable both to the lack of very precise printed instructions on their duties, and to the complexity of the machines.

Para hacer mas evidente esta falta mencionaremos las siguientes circunstancias que han acompañado los diferentes accidentes.

To make this lack more evident we mention the following circumstances that have accompanied the different accidents.

Accidente de la Locomotora Esslingen No. 10—

Esslingen Locomotive Accident No. 10—

El accidente se produjo por la rotura de un perno que unia dos segmentos del cañon de vapor. Como consecuencia el tren principió a retroceder; i los gases del fogon invadieron la casucha del maquinista.

The accident was caused by the breakage of a bolt that connected two segments of the steam-pipe. As a result the train began to go backwards; and the gases of the firebox invaded the driver's cab.

Este aplicó el freno de aire i salió de la casucha para apretar palancas de los carros. Segun declaracion del Jefe de Taller, entre el 1o. i 2o. carro la llave del freno de aire estaba cerrada.

He applied the air brake, and left the cab to pin down the wagons' brakes. According to the statement of the Head of Workshop, between the 1st and 2nd wagons the air brake valve was closed.

Se deducen dos faltas graves: 1a. abandonar la casucha sin cerrar el regulador i sin aplicar los frenos a mano de adherencia i cremallera de la locomotora; 2a.— Haber salido de Juncal sin cursiorarse de que el freno de aire funcionaba en toda la lonjitud del tren.

Two serious failings are deduced: First, leaving the cab without closing the regulator, and without applying the adhesion and rack hand brakes on the locomotive; Second, having left Juncal without checking that the air brake worked throughout the entire length of the train.

Como se trataba de carros vacios, si no hubiese habido interrupcion en la cañeria de aire este habría permitido la detencion del tren: la aplicacion de los frenos de banda i de los chocos de la locomotora en todo caso habrían producido la detencion.

As the wagons were empty, if there had been no interruption in the air-pipe, this would have allowed the stopping of the train. The application of the rack band brakes and the locomotive wheel brakes would in any case have caused the halting of the train.

Segun el Jerente i Jefe de Talleres el maquinista que recibio la muerte en este accidente era uno de los mas antiguos i mejores de la empresa: si es cierto que la invasion del vapor en la casucha puede haberle hecho perder en su sangre fria,

According to the Manager and the Head of the Workshops, the driver who died in this accident was one of the oldest and best in the company. It may be true that the entry of steam into the cab may have caused him to panic,

no cabe duda que fue culpable de haber partire partiarun con un tren en males condiciones de frena. La responsabilidad del maquinista es compartida por el conductor del tren, entre cuyas obligaciones tambien la de asegurase del perfecto funcionamiento del freno de aire en todo el tren.

There is no doubt that he was culpable of leaving with a train with defective brakes. The responsibility of the driver is

shared with the guard of the train, among whose obligations is one to ensure the perfect functioning of the air brake throughout the train.

Accidente de la locomotora Kitson No. 7,–

Accident to Kitson locomotive No. 7, -

Por los antecedentes se desprende que el maquinista ha olvidado de abrir los grifos purgadores de los cilindros antes de entrar en la cremallera; esto habria producido la trincadura del cilindro o la rotura de los grifos, lo que indujo al maquinista a bajarse de la locomotora durante la marcha de subida para averiguar la causa del abundante escape de vapor.

From the foregoing, it follows that the driver had forgotten to open the cylinder drain cocks before entering the rack. This would have caused the fracturing of the cylinder, or the breaking of the cocks, which led the driver to get off the locomotive during the ascent to find the cause of the abundant escape of steam.

Al subirse a la locomotora que empezaba a retroceder, ha aplicado el freno de aire el que ha impedido que el tren alcanzara grandes velocidades i se descarrila la falta de aplicacion del freno de banda de la cremallera i del freno de los chocos de la locomotora impidio que el tren se detuviera a tiempo para evitar la destruccion completa del mecanismo i de la via de cremallera en un distancia larga.

After getting on the locomotive that was beginning to go backwards, he applied the air brake which prevented the train from reaching a high speed and derailing. The lack of application of the rack band brake and the locomotive wheel brake prevented the train from stopping in time, and thus avoiding the complete destruction of the valve gear and of the rack over a long distance.

El maquinista Cattaldo era fogonero, pero habia trabajado como maquinista con el arado de nieve: ha demostrando sin embargo un olvido injustificado de sus deberes por no haber abierto los purgadores antes de entrar en la cremallera, par haberse bajado de la locomotora estando esta en movimiento ha de mostrado ignorancia por no haber aplicado inmediatamente las frenos de banda de la cremallera i de los chocos de las ruedas tanto antes de bajarse de la maquina como cuando subio.

The engine driver Cattaldo was a fireman, but he had worked as a driver with the snow-plough. He has nevertheless demonstrated an unjustified forgetfulness of his duties for not having opened the drain cocks before entering the rack, and for having got off the locomotive while it was in motion. He has shown ignorance for not having immediately applied the rack band brakes and the locomotive wheel brake both before getting off the machine as well as when getting on.

Accidente de la locomotora no. 5.–

Accident to locomotive no. 5.-

Este accidente se produja posteriormente a nuestra visita al FC Trasandino, el dia 5 de diciembre, ese dia subio con la máquina no. 5 i un tren de carros vacias hasta Caracoles: en Portillo dió cuenta al Jefe de Estacion que el

This accident occurred after our visit to the FC Trasandino, on December 5, that day a train of empty wagons to went up Caracoles with engine no 5; in Portillo he told the Station Master that

freno de aire de su maquina estaba malo: en Caracoles recibió orden de bajar con un tren de animales i segun parte del fogonero habria sido amenazado con multas sino seguia viaje.

his machine's air brake was defective. In Caracoles he was ordered to run down with a cattle train and, according to the fireman, he would have been threatened with fines if he did not comply.

El viaje de regreso hasta Portillo se hizo en buenas condiciones, pero en la bajada de Juncal a Portillo la presion del

aire se redujo a 30lbs. i el maquinista perdió control del tren hasta que se produjo el descarrilamiento.

The return trip to Portillo was in good conditions, but on the descent from Juncal to Portillo, the air pressure fell to 30lbs. The driver lost control of the train and a derailment resulted.

Este accidente prueba la ineficacia del freno Westinghouse tal como está dispuesto en la actualidad i la necesidad de modificarlo segun las indicaciones que hacemos, pero ademas prueba que el maquinista no ha hecho uso ni del freno de represion de aire de los cilindros de cremallera ni de los frenos a mano de la locomotora.

This accident proves the inefficiency of the Westinghouse brake as it is currently operated, and the need to modify it according to the suggestions we make, but it also proves that the driver has not made use of the counter-pressure brake of the rack cylinders, or of the hand brakes of the locomotive.

*Como es posible que haya habido tal imprudencia, se explica porque el maquinista habia entrado solo recientemente a servir en la seccion chilena del *Trasandino*: habia servido en la seccion argentina en que, por ser las gradientes de cremallera mas suaves i mas cortas basta con el freno Westinghouse para la detencion de los trenes.*

As it is possible that there has been such imprudence, it may be explained as the driver had only recently entered the service in the Chilean section of the *Trasandino*. He had served in the Argentine section in which, having gentler and shorter rack gradients, it is sufficient to use the Westinghouse brake in order to stop the train.

Se comprende que aunque hubierse recibido instruccion del Jefe de Talleres no estuviese aun familiarizado con el manejo de los frenos.

It is understood that, although he had received instruction from the Head of Workshops, he was not yet familiar with the handling of the brakes.

La responsabilidad del accidente pesa en gran parte sobre la lijereza que ha gastado en Jefe de Traccion para permitir que un maquinista nuevo circulase por la línea a cargo de una máquina antes de conocer bien el trabajo especial de las locomotoras de esta seccion.

The cause of the accident is due in large measure to the short time he had spent with the Loco Superintendent before being allowed, as a new driver, to drive on the line in charge of an engine, before properly knowing the special working of the locomotives on this section.

En resúmen, se nota falta de preparacion del personal i por otra parte este mal se agrava con la poca estadia en la línea, los cambios frecuentes de maquinistas que no resisten la viciacion del aire en los túneles i los cambios bruscos de temperatura a la salida de estos.

In summary, there is a lack of staff preparation and, on the other hand, this evil is made worse by short stays on the line, the frequent turnover of drivers who find difficult the vitiation of the air in the tunnels, and the sudden changes of temperature at the exit of these.

These two photos, probably taken by P. C. Dewhurst himself, show Esslingen no. **10**, almost certainly after the accident of 20th September 1910 recorded in the report above.



The loco is clearly no. **10**, and the cattle wagons match the description of the train consist in the report. P. C. Dewhurst was working for the Trasandino around 1910.

3.7.3 Appendix 3: Thoughts about Mallets for the *Red Norte* in 1918

In May 1918 the *Actas de las Sesiones del Consejo Administrativo de los Ferrocarriles del Estado*, source [31], reported that some thought had been given to purchasing larger and more efficient locomotives for the metre gauge in the same way that new Mikado 2-8-2s were then awaited for the broad gauge. A summary report followed:

37. Del oficio Núm. 1.429 de 18 de Abril, de la Direccion Jeneral (Departamento de Traccion i Maestranzas), en que se manifiesta que el programa de adquisiciones extraordinarias elaborado para la Red Central Norte consulta la compra de seis locomotoras articuladas Compound, sistema "Mallet".

37. From official letter No. 1,429 of April 18, from the Directorate General (Department of Traction and Workshops), in which it is stated that the capital assets procurement programme developed for the *Red Central Norte* was considering the purchase of six compound articulated locomotives, on the 'Mallet' system.

Los gastos que demande la realizacion de este programa seran de cargo a los fondos que produzca el empréstito por \$20.000,000 que la Empresa tiene autorizacion para colocar.

The expenses required to carry out this programme will be charged to the funds produced by the loan for \$20,000,000 that the Company has authorization to place.

La Empresa pidió a la Baldwin Locomotive Works especificaciones para la construccion de cuatro locomotoras, i esa firma, por intermedio de los senores Wessel Duval i Ca., presentó un a oferta de locomotoras construídas para trocha de 1.068 metro, usando el petroleo como combustible.

The Company asked the Baldwin Locomotive Works for specifications for the construction of four locomotives, and that firm, through *Wessel Duval i Ca.*, presented an offer of locomotives built for 3' 6" gauge tracks, using oil as fuel.

(These were the Mallets built for Russia and left on Baldwins' hands after the Russian revolution. A number of them ended up on the *FC Tocopilla-Toco* as explained in file 2 of this series.)

Las dimensiones jenerales de este tipo de locomotoras son las siguientes.

The overall dimensions of this type of locomotive are as follows.

<i>Diametro del cilindro de alta presion, m/m 330</i>	High pressure cylinder diameter 13"
<i>Diametro del cilindro de baja presion, m/m 483</i>	Low pressure cylinder diameter 19"
<i>Carrera de los embolos, m/m 559</i>	Piston stroke 22"
<i>Superficie del caldeo, metros cuadrados 122</i>	Boiler heating surface, 1313.2 square feet
<i>Superficie de parrilla, metros cuadrados 1.80</i>	Grate area 19.4 square feet
<i>Relacion entre superficie de parrilla i de caldeo 1:67,8</i>	Relationship between grate and heating areas 1:67.8
<i>Peso de la locomotora en servicio, toneladas 50.7</i>	Locomotive weight in service, 55.9 short tons
<i>Peso del tender, toneladas 23.4</i>	Tender weight, 25.8 short tons
<i>Peso por eje de locomotora, toneladas 8.5</i>	Locomotive axle loading 9.4 short tons
<i>Capacidad de aqua del tender, kilos 8.300</i>	Water capacity of tender, 2192.5 gals. US
<i>Capacidad de carbon del tender, kilos 3 000</i>	Coal capacity of tender, 3,31 short tons

La Direccion estudió detenidamente el tipo de locomotora propuesto i llega a la conclusion de que no realiza los arrastres fijados por la Administracion de la Red Central Norte para el servicio de las zonal en que esa máquina debe trabajar.

The Directorate carefully studied the type of locomotive proposed and concludes that it would not cope with the loads set by the Administration of the *Red Central Norte* for the service of the zones in which that machine must work.

Posteriormente, se han recibido proposiciones en la Direccion Jeneral de The Baldwin Locomotive Works para la venta de locomotoras articuladas Compound, sistema "Mallet" con sobrecalentador, i de las siguientes caracteristicas:

Subsequently, proposals have been received from the head office of The Baldwin Locomotive Works for the sale of compound articulated locomotives on the 'Mallet' system, with superheaters and the following characteristics:

(At least in terms of cylinder diameter these locos would have been comparable to the Andes Copper Mining Co.'s 2-6-6-2 Mallet no. **201**, delivered the previous year 1917. See section 3.3.4 of this file.)

<i>Diametro del cilindro de alta presion, m/m 406</i>	High pressure cylinder diameter 16"
<i>Diametro del cilindro de baja presion, m/m 635</i>	Low pressure cylinder diameter 25"
<i>Carrera de los embolos, m/m 559</i>	Piston stroke 22"
<i>Superficie del caldeo, metros cuadrados 159</i>	Boiler heating surface, 1711.5 square feet
<i>Superficie de parrilla, metros cuadrados 3.37</i>	Grate area 36.3 square feet
<i>Relacion entre superficie de parrilla i de caldeo 1:47.3</i>	Relationship between grate and heating areas 1:47.3
<i>Peso de la locomotora en servicio, toneladas 68.5</i>	Locomotive weight in service, 75.5 short tons
<i>Peso del tender, toneladas 39.1</i>	Tender weight, 43.1 short tons
<i>Peso por eje de locomotora, toneladas 11.4</i>	Locomotive axle loading 12.6 short tons
<i>Capacidad de agua del tender, kilos 17 000</i>	Water capacity of tender, 4491 gals. US
<i>Capacidad de carbon del tender, kilos 5 600</i>	Coal capacity of tender, 6.2 short tons

El costo de las cuatro locomotoras, puestas a bordo en Nueva York, seria de 176,000 dolares, segun precios fijados el 16 de Marzo último.

The cost of the four locomotives, loaded in New York, would be 176,000 dollars, according to prices set last March 16.

La Direccion Jeneral, despues de considerar las caracteristicas anotadas, manifiesta que este tipo de maquina cumple con las condiciones señaladas por la Administracion de la Red Central Norte en lo que se refiere a poder de arrastre, capacidad del tender, inscription en las curvas, pero que la Direccion no esta, sin embargo, capacitada para informar si el tipo ie locomotora Mallet Compound es recomendable para el servicio en aquella Red. Es éste un problema que no ha sido estudiado por la Direccion a causa de la falta de personal que destinar a la consideracion de esta materia.
The Directorate General, after considering the characteristics noted, states that this type of machine complies with the conditions indicated by the administration of the *Red Central Norte* in terms of hauling power, tender capacity, and curve-following ability, but that the Directorate is not, however, able to report whether this type, ie the Mallet compound locomotive, is recommended for service on that network. This is a problem that has not been studied by the Directorate because of the lack of personnel to be assigned to the consideration of this matter.

Por lo demas, la adopcion de una locomotora de este tipo requiere in(?) personal de maquinistas competentes, un servicio de traccion i conservacion bien organizado i maestranzas equipadas en condiciones de poder movilizar i reparar los grandes calderos i rnecanismos especiales inherentes a este tipo de locomotoras. Si estas condiciones no pueden realizarse, todas las ventajas que resultarían con la adopcion de tal locomotora perderian en la practica su valor.

For the rest, the adoption of such a locomotive requires (?) competent drivers, a well-organized traction and maintenance service and workshops equipped in conditions to be able to mobilize and repair the large boilers and special mechanisms inherent to this type of locomotive. If these conditions cannot be realized, all the advantages that would result from the adoption of such a locomotive would lose its value in practice.

La Direccion Jeneral, en vista de las consideraciones anteriores, no se cree facultada para informar a punto fijo si la

solution estaria en la adopcion del tipo Mallet o en la del tipo Compound o Mikado de mayor adherente que las locomotoras existentes. Sería para ello necesario haber hecho el estudio de la traccion de la Red Norte en todos sus detalles.

The Jeneral Directorate, in view of the foregoing considerations, does not believe that it is authorized to inform at this point if the solution would be the adoption of the Mallet type or that of compound or Mikado types of greater adhesive weight than the existing locomotives. It would be necessary to have completed a study of the traction of the *Red Norte* in all its details.

El Consejo, despues de imponerse en detalle de los antecedentes anteriores, acordó pedir a la Direccion Jeneral que proceda cuanto ántes a hacer estudiar en detalle la traccion de la Red Central Norte.

The Council (of the EFE), after studying closely the previous facts, agreed to ask the Directorate General to proceed as soon as possible in order to study in detail the traction of the *Red Central Norte*.

(In fact the broad gauge Mikados proved so successful that thoughts turned to a metre gauge equivalent rather than to more complicated locos such as Mallets. The result was the equally successful *tipo W*.)

3.7.4 Appendix 4: Tenders for the supply of locomotives to the Talcahuano naval base in 1927

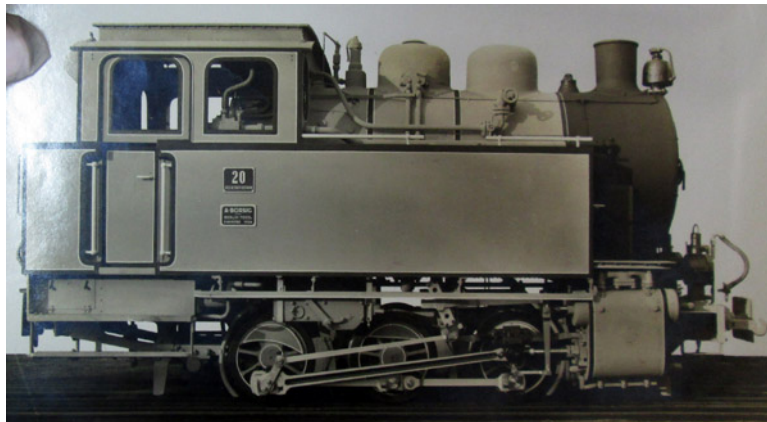
Background

As section 3.5.4 explained, file [MMAR2900] contains tender documents and GA sketches from several builders supplied when tenders for four more 0-6-0T locos were invited in 1927. These were NBL, Borsig, Armstrong Whitworth via a Belgian subsidiary, and several from the Para Import & Export GMBH from unspecified German and Belgian builders. William Beardmore had been included in the first invitation to tender but had declined.

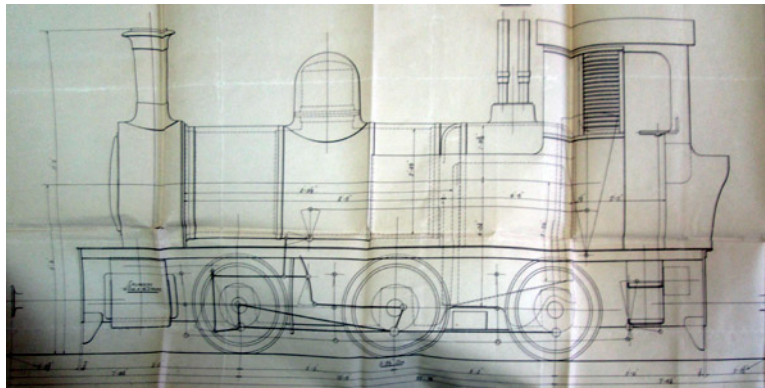
The AW offer was seen as being the most favourable, though probably requiring certain adjustments to track alignment to accommodate the width of the locos, but whether or not an order was placed is unknown. Nor is there any information about AW's 'our Belgian Company', which may merely have been a sub-contractor.

Letters from the various manufacturers reveal that the locos to be purchased were particularly needed to haul the passenger service between Talcahuano and the shipyard, involving a load of possibly 325 tons.

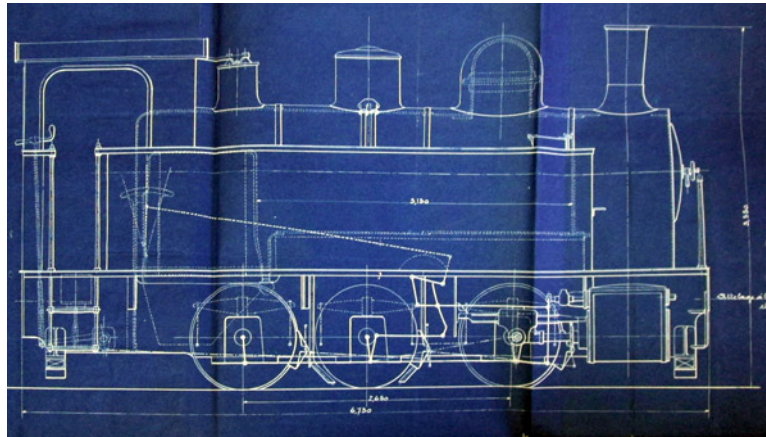
The various proposals



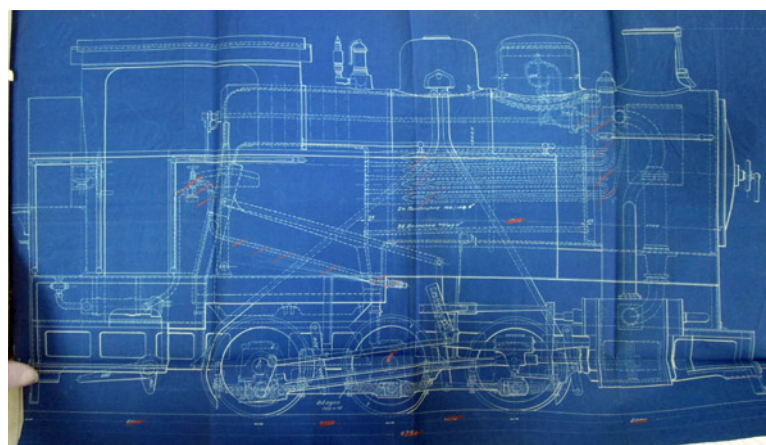
Borsig's proposal would have had d/w 1000mm, cyls. 400x500mm, a wheelbase of 2800mm, and a working weight of 34 tonnes.



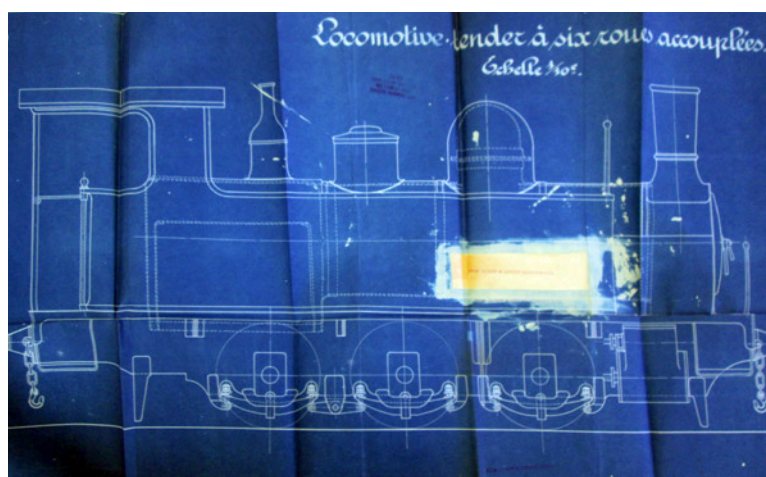
The proposal from NBL, price for one: £3,580, or for four: £2,945. D/w 3' 3", cyls. 13x18". Wheelbase 10' 6", working weight 26 tons 4 cwt.



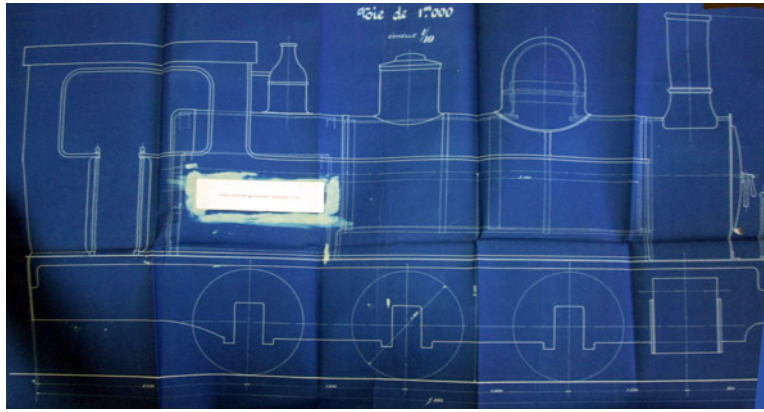
Armstrong Whitworth's proposal from their Belgian subsidiary. D/w 1000mm, cyls. 370x500mm, working weight 32.4 tonnes. Price for one: £1535, and price each if four were ordered: £1495.



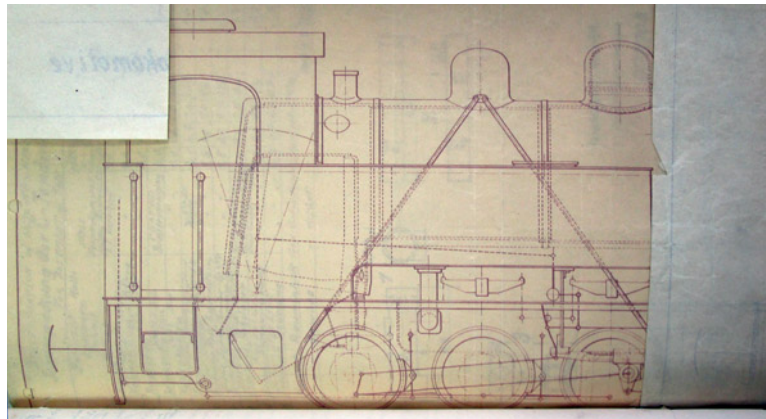
Para Import & Export Co. proposal 3017 from a German manufacturer. D/w 800mm, cyls. 320x400mm or 330x400mm if locos to be superheated. Working weight 25 tonnes.



The first Belgian proposal 3019 from the Para Import & Export Co. D/w 1000mm, cyls. 350x500mm, working weight 33.3 tonnes.



The second Belgian proposal 3020 from the Para Import & Export Co.
D/w 1100mm, cyls. 380x550mm, working weight 36 tonnes.



Another proposal from the Para Import & Export Co., presumably from a German builder.

Summary report from the Chilean Naval Commission in London to the Minister of Defence for the Navy

Julio 12 de 1927

No. 610.-

Con referencia a las propuestas -por locomotoras

Para el Apostadero de Talcahuano ordenadas pedir por cablegrama No. 3 de 4 de Mayo último tengo á honra confirmar el siguiente cablegrama enviado á U.S. con esta fecha:

"No. 21.- Referencia cablegrama No. 3 propuesta mas favorable locomotora es £1535 f.o.b. Amberes y £1705 c.i.f. Talcahuano peso 25 toneladas vacía y 32 toneladas con agua y combustible. Velocidad maxima 45 kilometros, radio curvas 50 metros. "Demás datos conforme. Van propuestas correo.- COSTA".

Se pidieron propuestas á los Señores A. Borsig, G.M.B. Berlin – William Beardmore & Co.Ltd, Glasgow. , North British Loco. Co.Ltd. , Glasgow. , Sir W.G.Armstrong Whitworth & Co.Ltd. Newcastle-on-Tyne y Para Import & Export Co.Ltd. Berlin.- De estas firmas se excusaron de cotizar precios los Señores William Beardmore & Co.Ltd. El resumen de las propuestas presentadas es el siguiente:

PROPUESTA DE A. BORSIG. ref: Grappe 5.B/Gr.

Precio por una locomotora F.O.B. Hamburg, £2,252. 0. 0

id. id. id.

en caso de ordenarse cuatro , £2,202. 0. 0

Plazo de entrega 4 meses.

Esta locomotora pesa 25 toneladas vacia y 34 toneladas en condiciones de trabajo. Tiene capacidad para una tonelada de carbon y para cinco toneladas de agua; su fuerza de tracción es de 6250 kilogramas.

Segun la especificacion esta locomotora es bastante buena, su precio no es el mas favorable pero bien pudiera ser considerada si las necesidades del servicio requirieran una máquina mas poderosa que la pedida.

PROPUESTA DE PARA IMPORT & EXPORT CO. Ltd.

Ref. 6488 – Dibujo O. P. 310.

Precio por locomotora, usando vapor saturado, . . . £1,425. 0. 0

id. id. usando vapor recalentado, £1,480. 0. 0

Plazo de entrega 6 meses.

Esta locomotoras no cumplen con especificacion en cuanto á la fuerza de traccion que es solo de 4,000 y 4,250 kilogramas en vez de los 5,500 pedidos, pero su peso en condiciones de trabajo es 25 toneladas y de 19.2 y 19.6 toneladas, vacias, respectivamente.

PROPUESTA DE LA NORTH BRITISH LOCOMOTIVE CO.Ld.

Precio por una locomotora f.o.b. Glasgow, £3,580. 0. 0

id. id. id.

en caso de ordenarse cuatro , £2,945. 0. 0

Plazo de entrega 30 semanas.

Esta propuesta aunque cumple con la especificacion con excepcion de la fuerza de traccion que es solo de 5352 kilogramas, es de un precio tan elevado que no cabe considerarla.

Se acompaña una hoja enviada por esta firma, en que se detallan los datos que es preciso dar al pedir precios por locomotoras, los que pueden ser de utilidad al departamento correspondiente del Apostadero.

PROPUESTA DE SIR W. G.ARMSTRONG WHITWORTH & CO.Ld.

Precio por una locomotora f.o.b. Amberes, £1,535. 0. 0

id. id. id.

en caso de ordenarse cuatro, £1,495. 0. 0

Plazo de entrega cinco meses.

Estas mismas locomotoras entregadas c.i.f. Talcahuano,

costarían: Por una, £1,705. 0. 0

Por cuatro, £1,665. 0. 0 c/u.

Estas locomotoras cumplen con la especificacion, pero hace presente que sus pesos son 25,000 kilos vacia y 32,400 kilos cargada con agua, combustible, etc.

El peso indicado en el cablegrama de U.S. No. 3 no se sabe si es el de la locomotora vacia, que es lo mas probable ó el de la misma, lista en condiciones de trabajo.

La propuesta mas favorable, á la que se refiere el cablegrama No.21, es esta de los Señores Sir W.G.Armstrong Whitworth & Co. Ltd. sería construida por una fábrica belga, pueden recorrer una distancia de 33 millas á 20 millas por hora sin renovar su dotacion de carbon.

Se acompañan las propuestas arriba mencionadas con su dibujos correspondientes, habiéndose dejado copies en esta Comision Naval para referencia. –

Saludos á U.S.

E. Costa Pelle.

Capitan de Navio

Jefe de la Comision Naval.

Supplementary letter from the Chilean Naval Commission in London to the Minister of Defence for the Navy

Julio 21 de 1927

No. 6 6 4.-

Como complemento a mi Oficio no.610 del 12 del actual tengo á honra acompañar á U.S. dos propuestas más por locomotoras para el Apostadero de Talcahuano presentadas por la firma Para Import & Export Gesellschaft m.b.H. Estas propuestas no alcanzaron á llegar á tiempo para remitirlas con los anteriores y las remito ahora á U.S. por si sus características y precios las hicieran merecedoras á ser consideradas.

Saluda á US.

E Costa Pelle.

Capitan de Navio

Jefe de la Comision Naval.

Notes from the Comandante en Jefe del Apostadero and the Comandante del Arsenal

//:-C A H U A N O, Agosto 31 de 1927,-

Secc. Ia.No. 4477,- Con respecto al tipo de la locomotora en referencia, informe el Comandante de Arsenales si es apta para el objeto para que aquí se requiere.-

Anótese.-

(Signature illegible)

Capitan de Navia.

Comandante en Jefe del Apostadero

Talcahuano, Setiembre 1o de 1927.-

E.de P. (?) No.3374,- Informe el Inspector de máquinas.-

Anotese.-

(Signature)

J?.ALLARD

Capitan de Fragata, Comandante del Arsenal.

Further correspondence

//ñ o r Comandante del Arsenal.-

No. 223.- En cumplimiento á la providencia que precede No.3374 de 1o. del actual, de esa Comandancia, tengo el honor de manifestar á Ud. lo siguiente:

Estudiadas comparativamente las diversas propuestas presentadas por Locomotoras para el servicio de este Apostadero, este Inspección considera que por sus características y precio, la oferta másconveniente es la presentada por la firma Armstrong Whitworth & Co.Ltd. :pero tomando en consideración que el tipo ofrecido por eta casa es 62 milímtros más ancha que las actuales estima el suscrito que estas propuestas deben ser estudiadas también por la Oficina de Obras Hidráulicas para los efectos de su información sobre adaptabilidad de estas locomotoras á la vía. Es cuanto puedo informar á Ud. sobre el particular:-

TALCAHUANO, Setiembre 3 de 1927.-

(Signature illegible)

Cap. de Fragata-Ingeniero

Inspector Téc. de Máquinas.-

Talcahuano, Setiembre 5 de 1927.-

No. 1516 con el informe que antecede, elévese al Sr. Comandante en Jefe del Apostadero.-

Anótese.-

(Signature)

J. Allard

Capitan de Fragata, Comandante del Arsenal

Report on the works necessary to accommodate these locos

//ñor Comandante en Jefe:

No. 407 En cumplimiento á la providencia de US.Secc. Ia.No.4613 de 7 de actual, sobre las propuestas por locomotoras para el servicio de este Apostadero que han sido estudiadas por la Inspección de Máquinas, solo tengo que agregar que en caso la firma Armstrong Whitworth & Co.Ltd. no pudiera reducir el ancho de sus locomotoras en - (62) sesenta y dos milímetros, ó sea al mismo ancho de las actuales - en servicio, sería conveniente proceder á separar las vías que sirven para hacer el cambio de la locomotora dela parte delantera á la parte trasera del tren y viceversa, en Marinao.-

Asimismo es necesario separar la línea de la reja de la estación en la curva que existe á la salida del Apostadero, y para los casos cuando la locomotora tenga que salir por la línea á San Vicente, hay necesidad mover la línea actual dando una salida normal á la puerta y establecer la curva al lado afuera, aunque esta resulte de un radio menor.- Todos estos cambios no son absolutamente necesarios, pues el mayor ancho de la locomotora que se ofrece siendo de 62 milímetros solamente, influye solo en 31 milímetros en ámbos lados del eje de la vía y para esos 31 milímetros aún queda juego en las partes que podría topa, ya sea con los carros del convoy ó con la reja, eso sí que al límite, por lo cual la opinión del suscritos que deben hacerse los arreglos que dejo indicados.-

Para hacer el ensanche del galibo ó mejor dicho la separación de las vía en Marinao, se hace necesario remover y correr las piedras del parapeto del Rompeolas hacia el Norte en un extensión de 200 metros. Dicho trabajo puede hacerse fácil y económicamente con una grua á vapor de 5 toneladas, montada sobre un carro de trocha de un metro.- El gasto se reduciría en este caso al consumo de carbón, agua, aceite i jornales correspondientes á un maquinista y tres ayudantes para estrobar las piedras.- Despues vendría el trabajo de correr las líneas que podría hacerse con el personal y elementos existentes, salvo detalles que habría que ver en el curso de la obra, como ser cambio de algunas durmientes, rieles, eclisas, clavos, y pernos que pedan faltar, así como tambien, algo de lastre para nivelar las líneas.- Lo mismo, en la parte que queda fuera del Apostadero, habría que correr lalínea alejándola de la reja en 31 milímetros, lo que puede hacersa con poco gasto.-

En caso que se estimara conveniente hacer estos trabajos por contrate, podría calcularse su costo en la siguiente forma

1o.- Trabajos en "Marinao"-

1 -Por correr las piedras del parapeto del Rompeolas de Marinao, dos metrs. hacia el norte en un extensión de 200 metros.

M3. 1.000.--\$. 12.00\$. 12.000.00

2 -Por correr la via férrea un metro hácia el Norte. M1. 200.--" 1.50" 300.00

3 -Por arreglos en los cambios, suministro de rieles, eclisas, pernos y clavos que falten. " 700.00

4 -Cambio de durmientes que estén en mal estado 25%. No. 70.--" 10.00" 700.00

5 -Lastre para nivelar las vías y cambios. M3. 60.--" 25.00" 1.500.00

\$. 15.200.00

2o.- Trabajos en la Estación.-

1 -Correr la vía 31 milímetros hacia afuera M1. 100.--" 1.50" 150.00

2 -Cambio de rieles por mayor largo quetomará lavía, facilitando el Apostadero los rieles " 200.00

3 -Lastre y cambio de durmientes, clavos, permos, etc. " 500.00

4 -Arreglos en la vía á San Vicente análogos á los nteriores " 1.500.00

Suma \$ 17.550.00

Mas el 15% para imprevistos y utilidad de contratista que ejecuta la obra " 2.632.50

Suma total \$ 20.182.50

Son: Veinte mil ciento ochenta y dos pesos 50/100.-

Finalmente, el suscrito se permite hacer presente, que estima de conveniencia para el servicio del Apostadero, que por

lo ménos dos locomotoras sean de tipo liviano, es decir, de unas 12 á 15 toneladas de peso para servicios rápidos, como ser, acarreo de materiales del Almacén de recepción, acarreo de tierras, piedras, arenas, etc. etc. asi como tambien para tráfico por líneas provisionarias, pues las locomotoras de mucho peso son inadecuadas y antieconómicas para

tales servicios.-

Es cuanto tengo el honor de informar á US. á este respecto, acompañando á US. los antecedentes respectivos.-

Talcahuano, Setiembre 10 de 1927.-

(Signature) Carlos Paulsens

Ingeniero Jefe.-

Conclusion

Whilst the above material tells a good deal about the process that went on in 1927, in the absence of any corroborating evidence or numbers in a builder's list we still have no idea whether any locos were actually ordered for the base.
