Part 15

Panama
steam locomotive list

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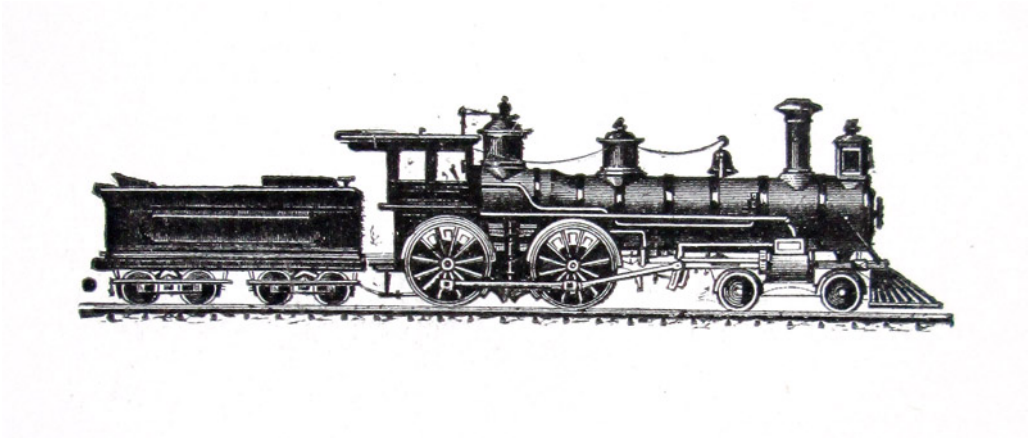
This file can be found, along with the five Chilean parts in the series and files for other South American countries, at http://www.railwaysofthefarsouth.co.uk/05x03chileansteamlocos.html



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, Casterton, Cumbria, UK ISBN 978-0-9928622-0-6), back in 2014. During the research undertaken 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 it expanded all the way up to Arica. Then, during the Covid pandemic, the first moves were made to extend these lists to some of the other smaller South American countries.

The foundations were built upon earlier lists created by others such as Allen Copeland, John Kirchner, and Reimar Holzinger. Additional information has been added bit by bit to their work. Photographs too have been inserted, though these have been kept small, partly to reduce the file sizes and partly to minimise the risk that copyright owners will object. 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 other researchers, including in particular Chris West, Claus Gaertner and Martin Murray. 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 5200+ 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 hopefullyy the layout is suitablefor 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 roughly 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

This Panamanian list

The starting points for the creation of this document were Reimar Holzinger's typed list and that published way back in 1950 by Alexander Saunders in *The Railway and Locomotve Historical Society Bulleti*n. Allen Copeland's list [SLS library file L7822] then provided a good deal more information about the later users of many of the ICC moguls used in the construction of the canal. It is clear that such information has drawn on the researches of domestic US railfans, unlike most other files in this series which have had little in common with mainland US roads. Charles Small's volumes have also been examined closely.

Introducción general

Estas listas tienen su origen en la publicación del libro *Railways at the End of the World* (The Araucaria Press, 1 Fellview, Casterton, Cumbria, LA6 2SA, Reino Unido. ISBN 978-0-9928622-0-6), en 2014. Durante la investigación realizada para recopilar información para dicho volumen, a veces resultaba frustrante que las locomotoras del sur de Chile no se pudieran identificar fácilmente.

Tras la publicación del libro, se dispuso de más tiempo, y poco a poco se hizo evidente que una lista de las locomotoras de los Ferrocarriles Estatales de Chile (EFE) tendría que abarcar todo el país para ser útil, por lo que se amplió hasta Arica. Posteriormente, durante la pandemia de COVID-19, se dieron los primeros pasos para extender estas listas a algunos de los otros países sudamericanos más pequeños.

Las bases se construyeron sobre listas anteriores creadas por otros autores, como Allen Copeland, John Kirchner y Reimar Holzinger. Poco a poco, se ha ido añadiendo información adicional a su trabajo. También se han insertado fotografías, aunque de tamaño reducido, en parte para reducir el tamaño de los archivos y en parte para minimizar el riesgo de objeción de los titulares de los derechos de autor. El objetivo principal de las imágenes es, en cualquier caso, permitir la identificación de las locomotoras que aparecen en otras fotografías en otros lugares. Se ha informado sobre la disponibilidad de versiones en alta resolución en museos y archivos para animar a los lectores interesados a adquirir lo que necesiten de quienes se interesan por los dibujos o fotografías históricas.

A medida que se ha difundido la noticia de este trabajo, otros investigadores, como Chris West, Claus Gaertner y Martin Murray, han colaborado. Les agradezco enormemente su desinteresada disposición para compartir información e imágenes.

Si bien muchas de las fuentes consultadas están en español, estas listas actualmente solo están disponibles en inglés. Esto se debe en parte a mi falta de confianza en el idioma, pero también a que mantener sincronizado un documento en constante evolución en dos idiomas diferentes requiere mucho tiempo. No obstante, las citas de documentos históricos se han mantenido generalmente en español y es de esperar que en el futuro se pueda crear una versión en español de toda la obra.

Es probable que el análisis minucioso de estas páginas siga siendo un interés minoritario, y es probable que aún menos impriman las más de 5200 páginas. Por lo tanto, los archivos se han diseñado para su lectura en pantalla, con hipervínculos desde la página de contenido para facilitar la búsqueda de cada sección. La densidad de información probablemente desaconseje la navegación en un teléfono móvil, pero esperamos que el diseño sea adecuado para su visualización tanto en tabletas como en ordenadores de mayor tamaño.

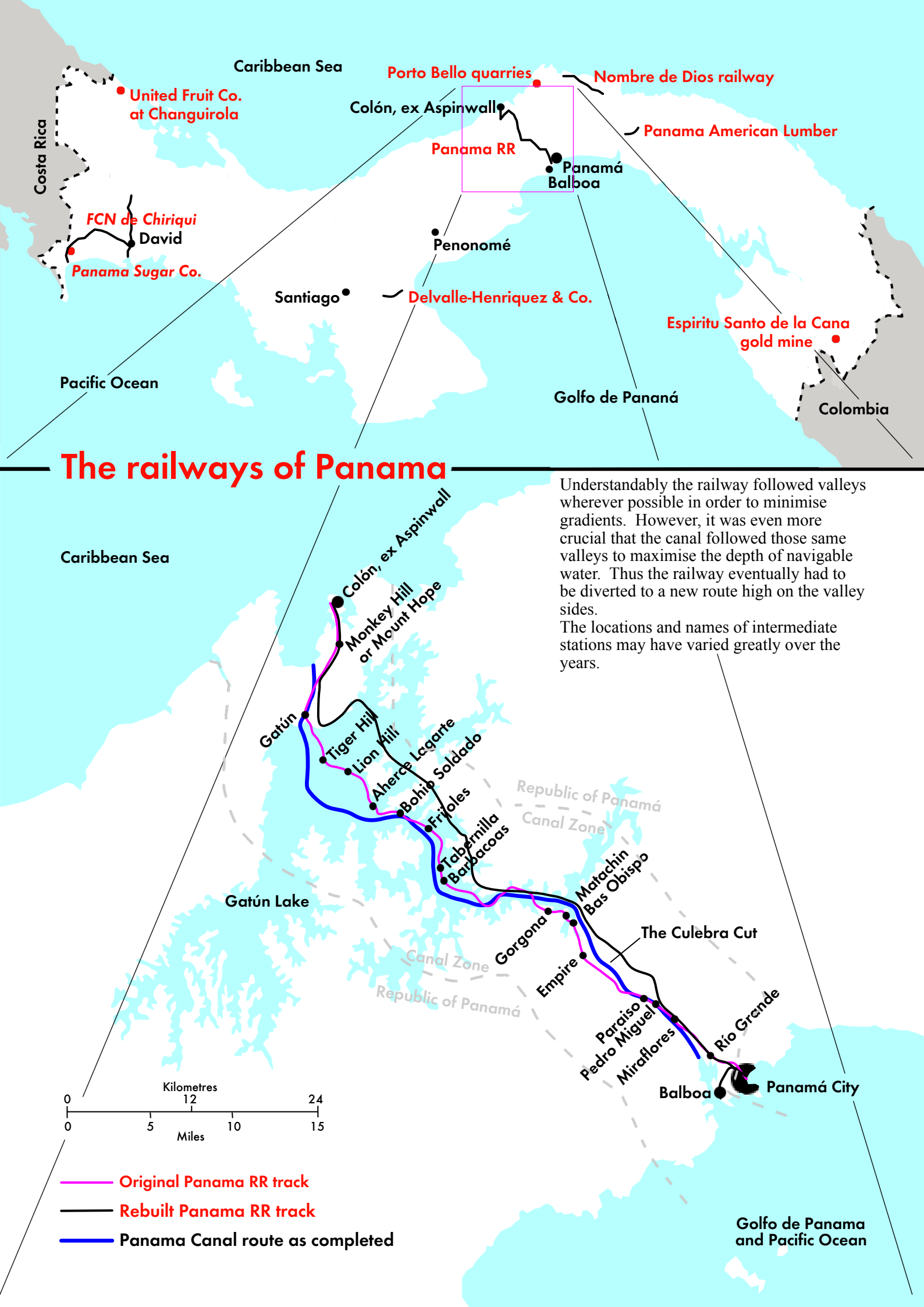
Es evidente que este es un trabajo en curso, con actualizaciones que se suben a la web aproximadamente trimestralmente. Se agradecerán comentarios, información o imágenes adicionales, y sugerencias para mejorar el diseño. Se puede contactar con el autor en martincoombs11@gmail.com

Esta lista Panameña

Los puntos de partida para la creación de este documento fueron la lista mecanografiada de Reimar Holzinger y la publicada allá por 1950 por Alexander Saunders en *The Railway and Locomotive Historical Society Bulletin*. La lista de Allen Copeland [archivo de la biblioteca SLS L7822] luego proporcionó mucha más información sobre los usuarios posteriores de muchos de los moguls ICC utilizados en la construcción del canal. Está claro que dicha información se ha basado en las investigaciones de los fanáticos de los ferrocarriles nacionales de EE. UU., a diferencia de la mayoría de los otros archivos de esta serie, que tienen poco en común con las líneas de EE. UU. continental. Los volúmenes de Charles Small también han sido examinados de cerca.

List of contents

Red text = hyper-links to appropriate pages.


Caribbean Sea
Porto Bello quarries
Nombre de Dios railway
United Fruit Co.
at Changuirola
Colón, ex Aspinwall
Panama American Lumber
Costa Rica
Panama RR
Panamá
Balboa
FCN de Chiriqui
David
Penonomé
Panama Sugar Co.
Santiago
Delvalle-Henriquez & Co.
Espiritu Santo de la Cana
gold mine
Pacific Ocean
Golfo de Pananá
Colombia
The railways of Panama
Understandably the railway followed valleys wherever possible in order to minimise gradients. However, it was even more crucial that the canal followed those same valleys to maximise the depth of navigable water. Thus the railway eventually had to be diverted to a new route high on the valley sides.
The locations and names of intermediate stations may have varied greatly over the years.
Caribbean Sea
Colón, ex Aspinwall
Monkey Hill
or Mount Hope
Gatún
Tiger Hill
Lion Hill
Alhajuela
Bohio
Soldado
Frijoles
Tabernilla
Barbacoas
Republic of Panamá
Canal Zone
Matachin
Bas Obispo
Gatún Lake
Gorgona
The Culebra Cut
Canal Zone
Empire
Republic of Panamá
Paraiso
Pedro Miguel
Miraflores
Río Grande
Balboa
Panamá City
Kilometres
0
12
24
0
5
10
15
Miles
Original Panama RR track
Rebuilt Panama RR track
Panama Canal route as completed
Golfo de Panama
and Pacific Ocean

Other parts of this work

This is one of a number of PDF files covering the steam locomotives of Chile and other South American countries across a wide variety of gauges. The other files can be accessed by clicking on the red hyperlinks listed below.

Notes and sources

[1] *Short History of the Panama Railroad*, Alexander Saunders, *The Railway and Locomotve Historical Society Bulletin*, No. 78, 1949.
[2] *Locomotives of the Panama Railroad*, Alexander Saunders, *The Railway and Locomotve Historical Society Bulleti*n, No. 80, May 1950.
[3] *The history of mining and mineral exploration in Panama: From Pre-Columbian gold mining to modern copper mining*, Redwood, Stewart D. in the *Boletín de la Sociedad Geológica Mexicana* vol. 73.3. http://www.scielo.org.mx/scielo.php?pid=S1405-33222020000300012&script=sci_arttext_plus&tlng=en
[4] *Railways of Central America and the West Indies*, W. Rodney Long, 1925, US Dept. of Commerce Bureau of Foreign and Domestic Commerce, Washington DC. https://babel.hathitrust.org/cgi/pt?id=uiug.30112102053045&view=1up&seq=2&skin=2021
[5] Friends of Latin American Railways website at /www.ferrolatino.ch
[6] *Fifty Years at Panama 1861-191*1, Tracy Robinson, 1907. Trow Press, New York. Available on Hathi Trust website.
[7] *Diagrams and photographs of railroad equipment used to construct the Panama Canal, 1881-1914*, Bert E. Davis, 1994. published by J. Grigore, Venice, Florida. NB Not yet seen.
[8] *Report of Joseph L. Bristow : special Panama railroad commissioner to the secretary of war June 24, 1905* / Pub. by Office of administration Isthmian canal affairs. https://babel.hathitrust.org/cgi/pt?id=njp.32101066878693&view=1up&seq=47&skin=2021
[9] *Special committee on the investigation of the Panama railway company* ... February, 1905. D. W. Shackleford, 1905. Washington DC. https://babel.hathitrust.org/cgi/pt?id=nnc1.cu56818343&view=1up&seq=245&skin=2021
[10] *Bulletin du canal interocéanique*, Paris : Impr. de la Société de Publications Périodiques, 1880-1889. https://catalog.hathitrust.org/Record/009793524
[11] *History of the Panama Canal; its construction and builders*, Ira E. Bennett, 1915, Historical Publishing Co., Washington, DC.
[12] *Cent vingt-cinq Ans de Construction de Locomotives a Vapeur en Belgique*, by André Dagant, in the *Bulletin de l'Institut Archéologique Liégeois*, Tome LXXXVI from 1974,
[13] https://www.steamlocomotive.com/locobase.php?country=USA&wheel=2-6-0&railroad=icc#6424
[14] *Military Railroads on the Panama Canal Zone*, Charles Small, 1982, Railroad Monographs, Cos Cob, Connecticut.
[15] *Rails to the Diggings, Construction Railroads of the Panama Canal*, Charles S. Small, 1981, Railroad Monographs.
[16] *Illustrated catalogue: details of locomotives,* Baldwin Locomotive Works, Burnham, Parry, Williams & Co., Philadelphia, 1885. https://babel.hathitrust.org/cgi/pt?id=chi.087165506&view=1up&seq=1&skin=2021
[17] *Canal Zone Images* website, at http://www.czimages.com/default.htm
[18] *Railways of Latin America in Historic Postcards*, Christopher Walker, 1997, Trackside Publications, Skipton, Yorkshire.
[19] *Reports of the board of directors of the Panama RR Co.,* 1896-1908. https://babel.hathitrust.org/cgi/pt?id=mdp.39015021121796&seq=1
[20] United Fruit Co. photographs https://library.harvard.edu/collections/united-fruit-company-photographs

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.

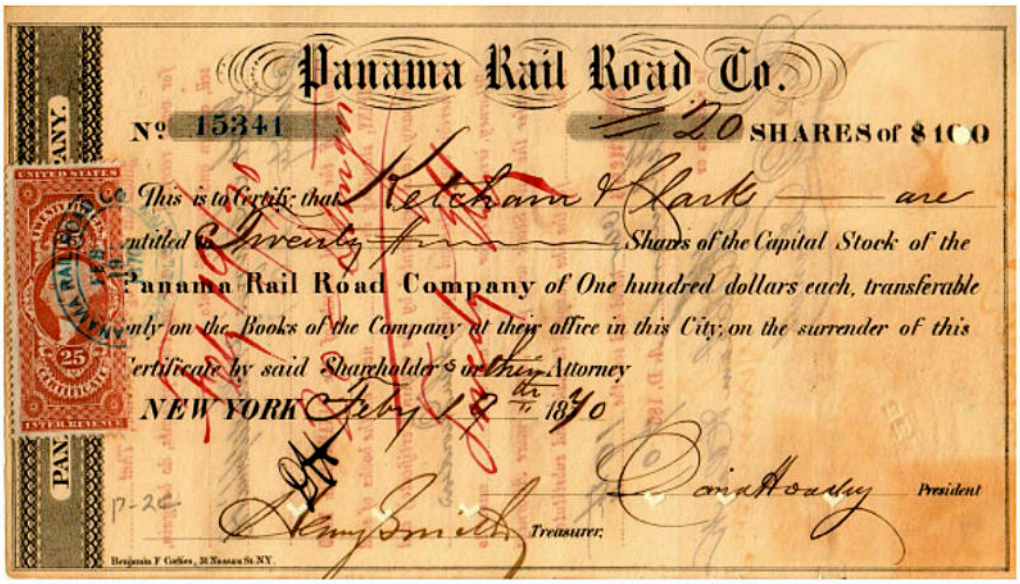
The list is arranged in date order for entry to service (which may have been some time after construction) of the first engine of each class, subsequent batches of the same class follow-on, keeping all engines of the same class together; thus the list of engine numbers is not consecutive, nor are the classes in alphabetical order. There are cross-references for replacement engines.

15.1 The Panama Railroad eras and canal construction, largely 5' 0" gauge, but not exclusively so

(Narrow gauge canal works locomotives are in section 15.2)

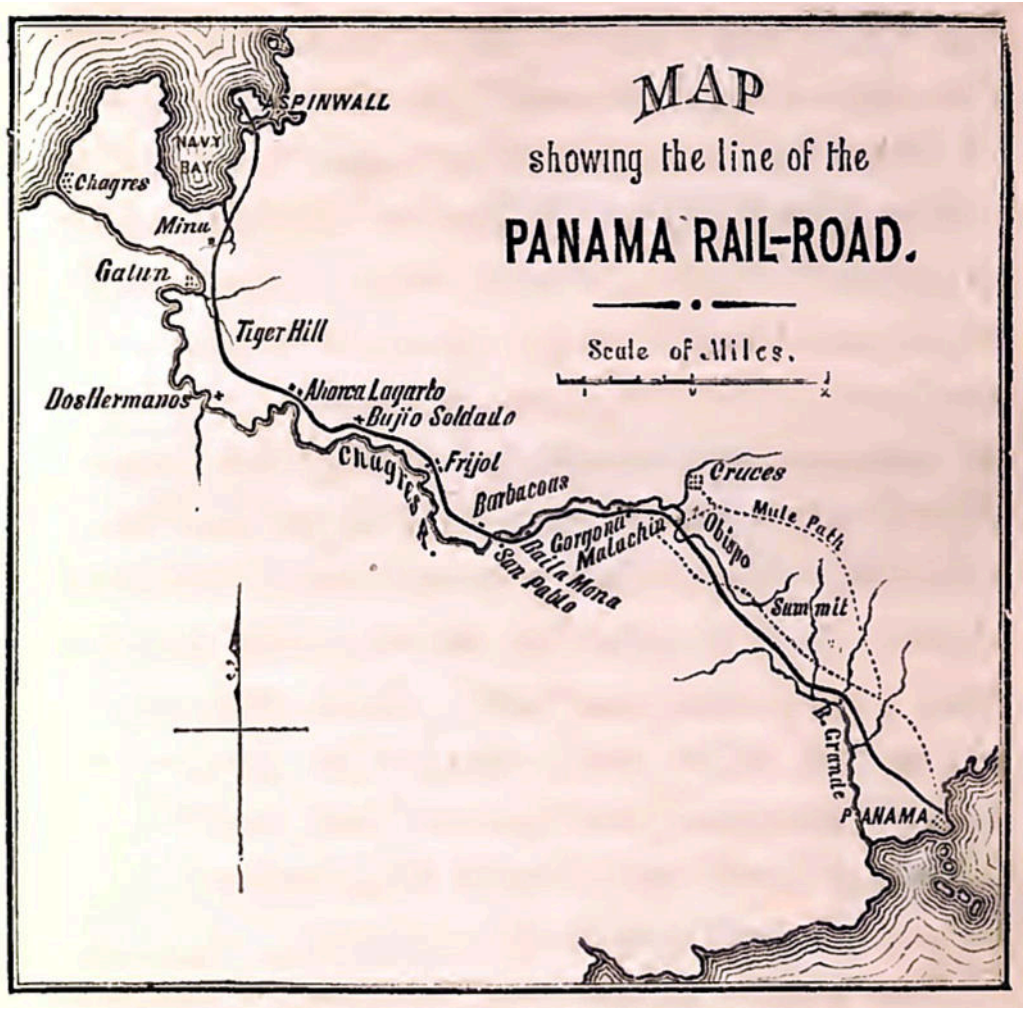
15.1.1 Early years of the Panama Railroad

1852-1879



Background

Initial construction was on standard gauge. Operations were initially on 5' 6" gauge but later regauged to 5' 0". This was in an era when the gauges of mainline railroads in the USA varied considerably rather than all being 4' 8½". "The most strenuous efforts were now made, and on January 27, 1855, 'at midnight and in rain', the last rail was laid at the Summit, now Culebra, thirty-seven miles from Aspinwall, and ten miles from Panama." [6]



1 Construction locomotives, probably 4' 8½" / 1435 mm gauge.

4-2-0 d/w 48", cyls. 10x18", built by Baldwin in 1842

Ordered for Philadelphia & Reading RR, then sold 1850 to Panama RR.

'PERKIOMEN' w/n 160

4-4-0 d/w 40", cyls. 12x16", built by New Castle Manufacturing Co. in 1842

Ordered for the Philadelphia & Reading RR. Sold to Panama RR in 1851. The builder was based in New Castle, Delaware.

'POTTSVILLE' w/n ?

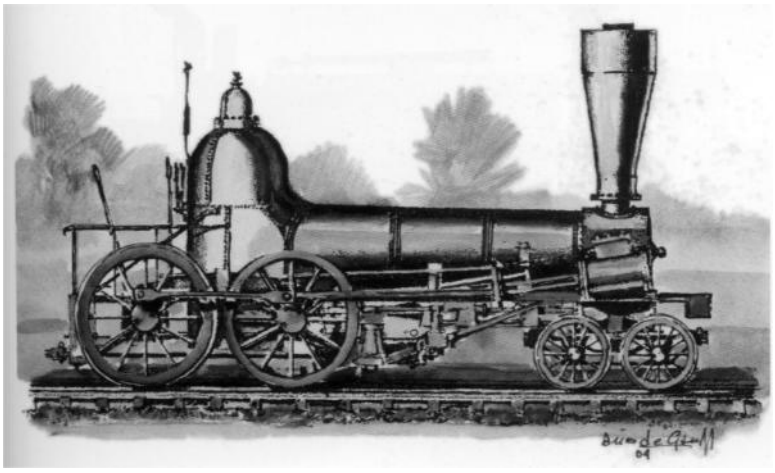
4-4-0 d/w 42", cyls. ?, built by G. E. Sellers in 1851 (1st) and 1852 (2nd & 3rd)

Ordered for Panama RR. Weight 12 tons. These seem to have been the only engines built by Sellers. Copeland states that these had been built with Fell centre rail drive as mentioned below, but that this had been removed before shipment to Panama. He also seems to imply that these and the first Niles locos listed below were one and the same.

? w/n ?

'ISTHMUS' w/n ?

? w/n ?

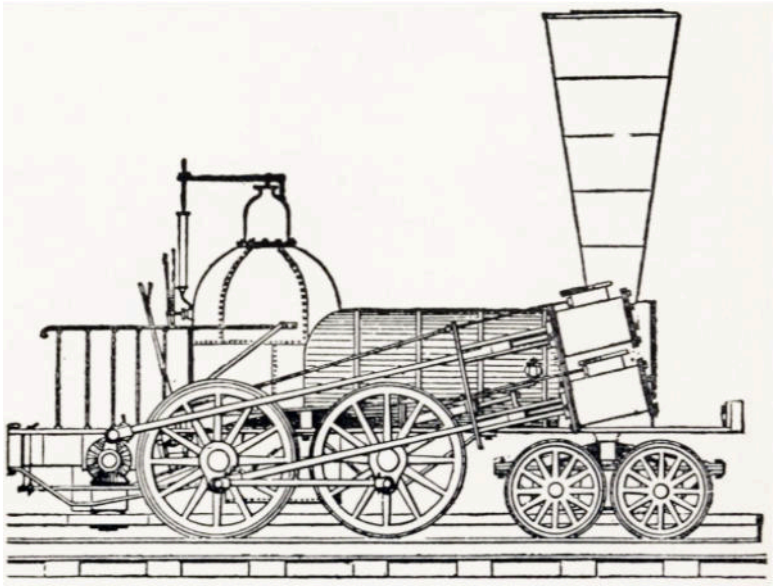


A painting by Dr. Gustavo Arias, supposedly from a drawing of the third Sellers-designed engine.

4-4-0 d/w ?, cyls. ?, built by Niles & Co. of Cincinnati in ?

Designed by George Escol Sellers with additional Fell centre rail traction. Gauge 5' 6". There may have only been four of these. Certainly Connelly's Niles list shows only four.

?
?
?
?



Note the addition cylinders and connecting rods driving a lay-shaft under the cab. These provided power to the wheels gripping a Fell centre rail.

4-4-0 d/w ?, cyls. ?, built by Niles & Co. of Cincinnati in ?

Ordered for ? 17 tons weight. Gauge 5' 6". Niles seems solely to have built locos with either 20 or 22" cylinder stroke.

?
?
? Number of these uncertain. Connelly's Niles list shows only three.

Another puzzle

The photo below, showing a Baldwin flexible beam 0-8-0 from the 1840s, appears in the US Library of Congress catalogue as 'An old-timer on the Panama Railroad". However, it seems likely that this is incorrect, and that in fact this was one of the pair of such machines (Baldwin nos. 309-310) supplied in 1846 to the *Caminos de Hierro de La*

Habana in Cuba.

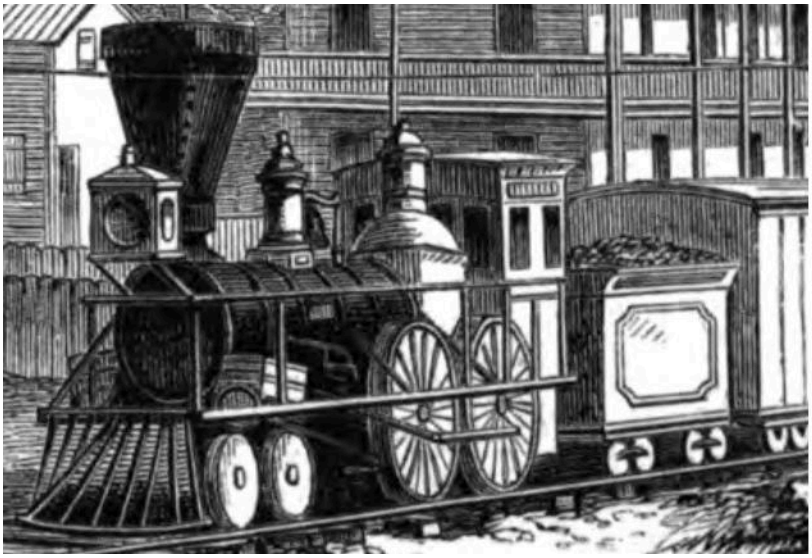
This photo, supposedly from 1847, is in the US Library of Congress collections entitled "An Old-timer on the Panama Railroad'. However, it seems very probable that this is incorrect.

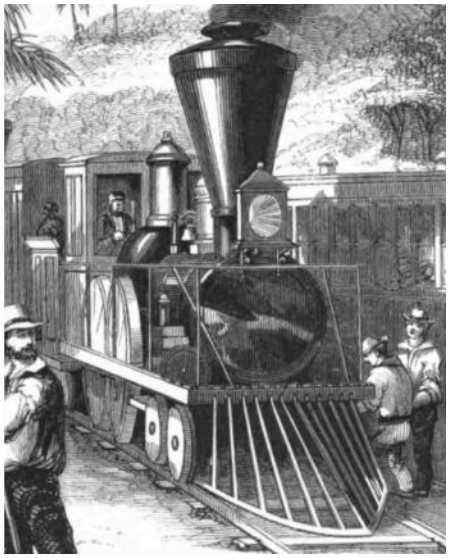
2 Line locomotives, Nos. 1-11 built to gauge 5' 6" = 1676 mm. Later all rebuilt to 5' 0" = 1524mm.

4-4-0 d/w 54", cyls. 13x20", built by Portland in 1852 (1-3), 1854 (4-6), 1855 (7-8), 1856 (9-10)

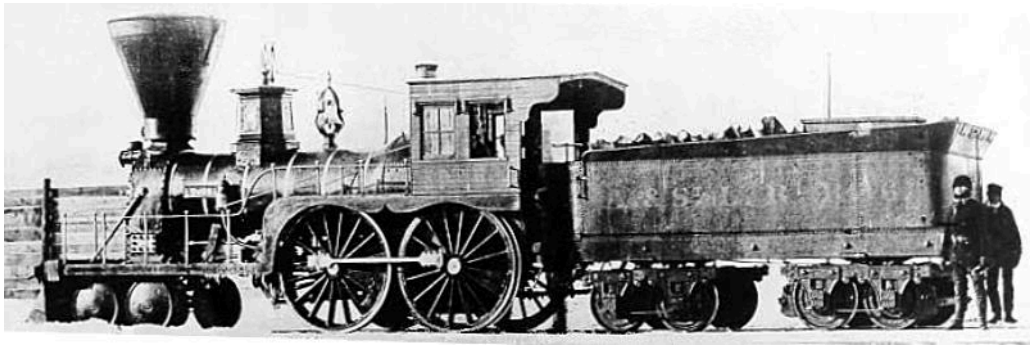
Ordered for Panama RR. All built to 5' 6" gauge. Later will probably all have been rebuilt to 5' 0" gauge. Bob Lehmuth's Portland list gives d/w as 56". The Portland company notes copied by R. F. Dole record that the cylinders were inclined at a gradient of 1 in 10 though only at 1 in 12 for engines numbered **4-6** and **9-10** (possibly an error); that the boiler diameter was 40", the d/w diameter was 54";, the locos were the first produced by Portland to have (Stephenson's) link motion rather than drop hook or V-hook cut off, the front trucks were carried on two pairs of 26" wheels, the driving wheelbase 5' 4", the front truck wheelbase 3' 6", and the overall loco wheelbase 17' 1" for the 1st three and 17' 2" for the final pair. The stack height of the majority was 15' 1". The number of boiler tubes varied between 166, 117, 119 or 121! The firebox sizes were only specified from loco no. **4** onward, originally as 42x43¼" but for nos. **7-10** the size had increased to 46x43½". Puzzlingly, nos. **9** and **10** are noted explicitly as tank engines and with stacks only 13' 8" tall.

1 'NUEVA GRANADA'	w/n 37	Inside cylinders according to some, but R. F. Dole's notes show outside connected like the others.
2 'BOGOTÁ'	w/n 38	Remainder had outside cylinders?
3 'PANAMA'	w/n 39	
4 'GORGONA'	w/n 65	
5 'OBISPO'	w/n 69	
6 'MATACHIN'	w/n 70	
7 'GATUN'	w/n 78	
8 'MANZANILLA'	w/n 79	The 1879 company report comments that this engine had "been condemned and put out of service."
9 'CARDENAS'	w/n 89	
10 'BARBACOAS'	w/n 90	

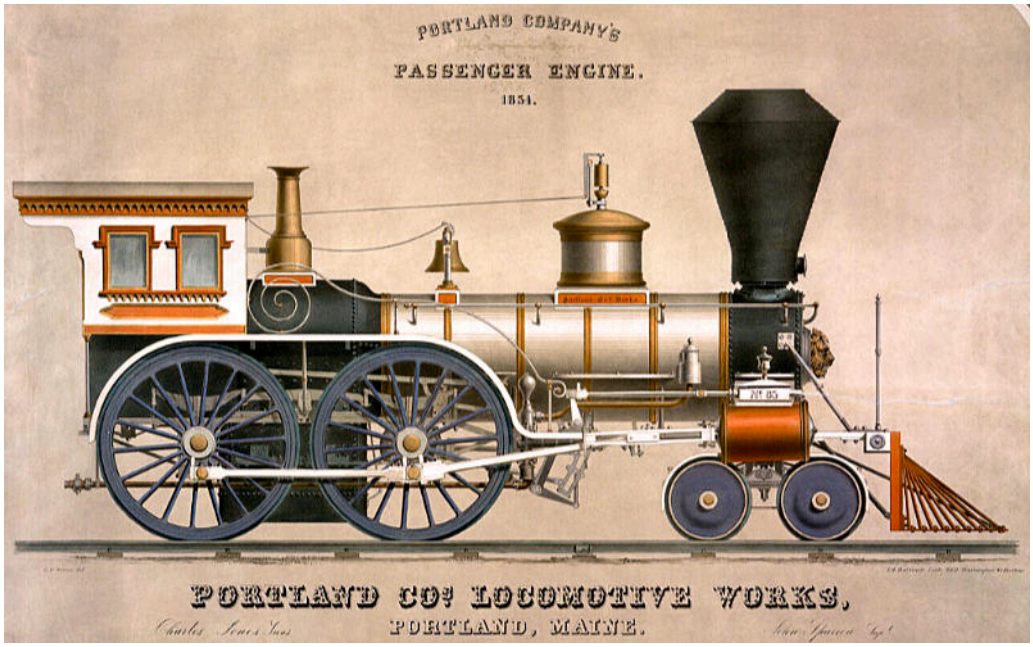


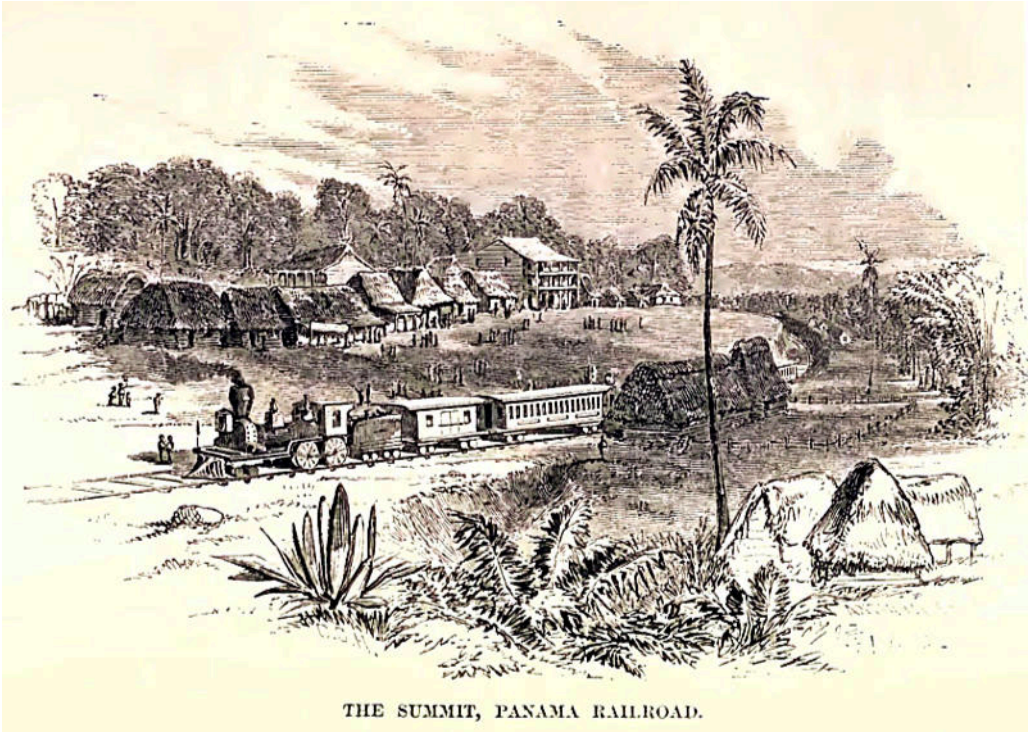


Whilst these engravings, from F. N. Otis' *Illustrated History of the Panama Railroad* published in 1861, are no doubt imaginative, features such as the low running board with handrail may well have had some basis in fact.



This is an inside-connected Portland engine for the Atlantic & St. Lawrence RR, built some time between 1848 and 1853, whilst below is an outside-connected loco from 1854. The disk truck wheels with inside bearings, large safety valve bonnet, bell behind the sand-dome and spectacular stack match the engravings above, as to a degree does the raised firebox crown. Note the large number of driving wheel spokes: sixteen for the loco above and eighteen below.





An engraving from Robert Tomes' book *Panama in 1855*. The long gap between the short front bogie and the closely-spaced driving axles does at least bear some resemblance to the illustrations above.

An 1855 report

The report of the Chief Engineer to the directors, in May 1855, talked of six additional locomotives still to be obtained.

4-4-0 d/w 54", cyls. 11x22", built by Rogers in 1858

Ordered for Panama RR. Gauge 5' 0". Copeland says that this engine was also built to 5' 6" gauge.

11 'ISTHMUS' w/n 814 [822]? Connelly's Rogers list says gone by 1883.

4-4-0 d/w 54¾", cyls. 13x20", built by Portland in 1865

Ordered for Panama RR. Built to 5' 0" gauge. Bob Lehmuth's Portland list gives d/w as 56".
Firebox 47½x32", wheelbases were: driving 6' 6", engine truck 5' 6", loco overall 12' 10", tender truck 3' 8", tender 11' 8", overall 38' 8"; Overall length 46' 11"; tenders had steel underframes; steel pilots fitted; stacks 15' 1" high.

12 'ATLANTIC' w/n 125 Taken over by *CUCI* (see next section). Connelly says gone by 1883.

13 'PACIFIC' w/n 126 Taken over by *CUCI* (see next section). In service early in 1884, though in poor condition.

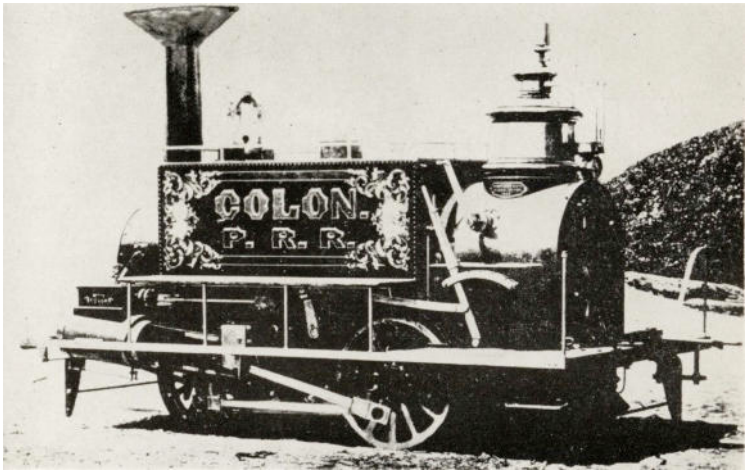
0-4-0T d/w 42", cyls. 12x18", built by Portland in 1865 and 1867

Ordered for Panama RR. Built to 5' 0" gauge. Bob Lehmuth's Portland list gives d/w for the 2nd and 3rd locos as 36". Cyls. inclined 1 in 10; boiler diamter 40", firebox 34x39"; wheelbase 6' 0"; overall length 18' 2"; 22" diameter dome; no cab; 2nd and 3rd locos had bell in front of stack; stack 12' 8" high; no pilots. 2nd & 3rd locos had cabs.

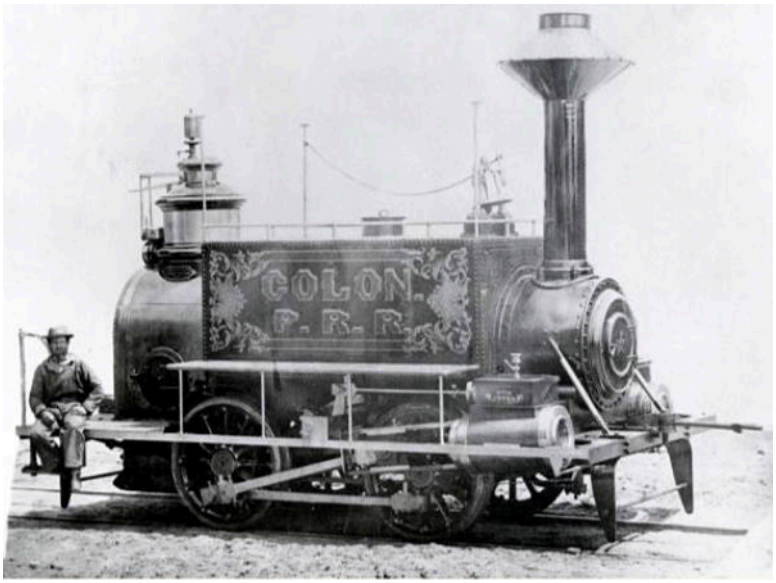
14 'COLON' w/n 136 Taken over by *CUCI* (see next section). Connelly says gone by 1883.

15 'CHIRIQUI' w/n 148 Taken over by *CUCI* (see next section). Saunders says 36" d/w. Connelly says gone by 1883.

16 'DARIEN' w/n 149 Boiler explosion 1869. Saunders says 36" d/w.



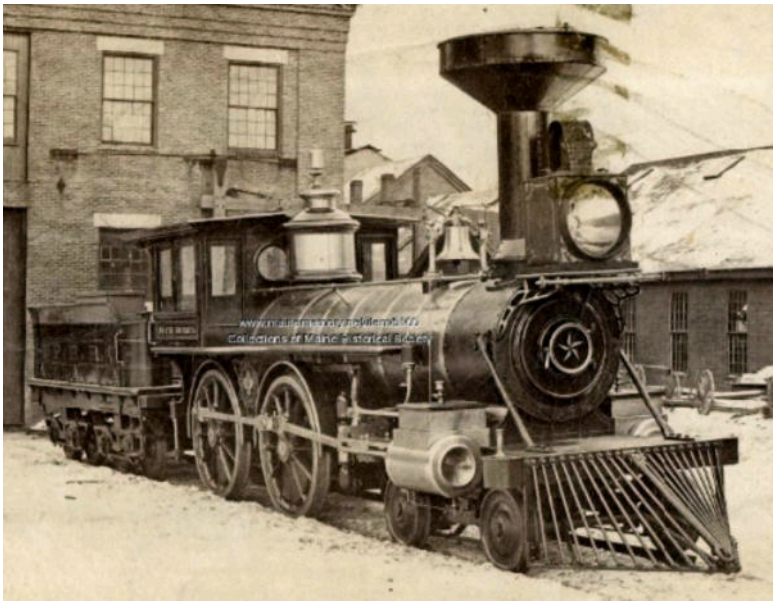
The photos above and below show the Portland 0-4-0ST no. **14 'COLÓN'**. Note the regulator and reverser on the left side of the firebox, and the firehole door on the right side.



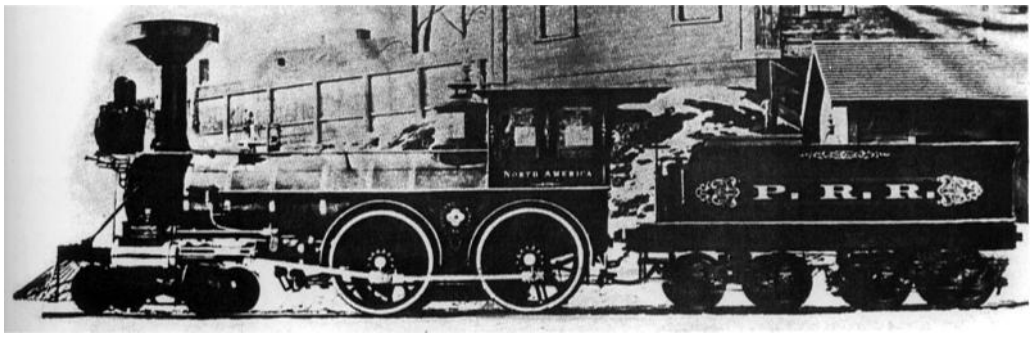
4-4-0 d/w 54", cyls. 13x20", built by Portland in 1867, 1868 and 1869

Ordered for Panama RR. Connelly's Portland list says d/w 55.2" and R. F. Dole's notes sat 55¼";
Boiler diameter 48"; firebox 47½x32"; front truck wheels 26", tender wheels 30"; driving wheelbase 6' 6", engine truck wheelbase 5' 6"; no sandbox; tender truck wheelbase 3' 8", and tender overall wheelbase 11' 8"; smoke arch (?) diameter 46½". The cylinders were supposedly inclined at 1 in 10, though that does not show up on the photo below.

17 'SOUTH AMERICA'	w/n 150	Taken over by *CUCI* (see next section). Connelly says gone by 1883.
18 'NORTH AMERICA'	w/n 151	Taken over by *CUCI* (see next section). Connelly says gone by 1883.
19 'NEW YORK'	w/n 157	Taken over by *CUCI* (see next section). Connelly says gone by 1883.
20 'SAN FRANCISCO'	w/n 158	Taken over by *CUCI* (see next section). Connelly says gone by 1883, but the company annual report records in in service early in 1884, though in poor condition.



A Portland works photo showing no. **17 'NORTH AMERICA'**, outside the works in the only snow it was ever likely to meet. The photo below was probably taken on the same occasion.



0-4-0 d/w 42¾", cyls. 12x18", built by Portland in 1873

Ordered for Panama RR. Gauge 5' 0".

Boiler diameter 43.625"; firebox 34x39"; wheelbase 6' 0"; fitted with cab; shipped on schooner 'Willie Martin'.

21 'VERAGUAS' w/n 261 Taken over by *CUCI* (see next section). In service early in 1884, and in fair condition.

The fleet in 1872

Panama Railroad Report.

The following is the annual report of the directors of this company, presented at the annual meeting in New York on the 1st instant. The road is 47½ miles long, and at last reports had 15 locomotives, 23 passenger and 131 freight cars:

The directors take pleasure in reporting that the net earnings

A paragraph from the *Railroad Gazette* of 4th May 1872, p192.

The fleet in 1877, 1878 and 1879

The annual report of the Panama RR Company for **1877** commented:

MOTIVE POWER In my last report I gave the total number of locomotives in good condition at 13. Since then, two more, that had been laid aside some years ago, have been carefully tested, and, being found fit for several years' service, have been put in running order, increasing our number to 15. Of these, 8 are in constant use, 3 are held in reserve (2 at Aspinwall and 1 at Panama), to be ready in case of emergency, or when extra trains are needed, and 4 are

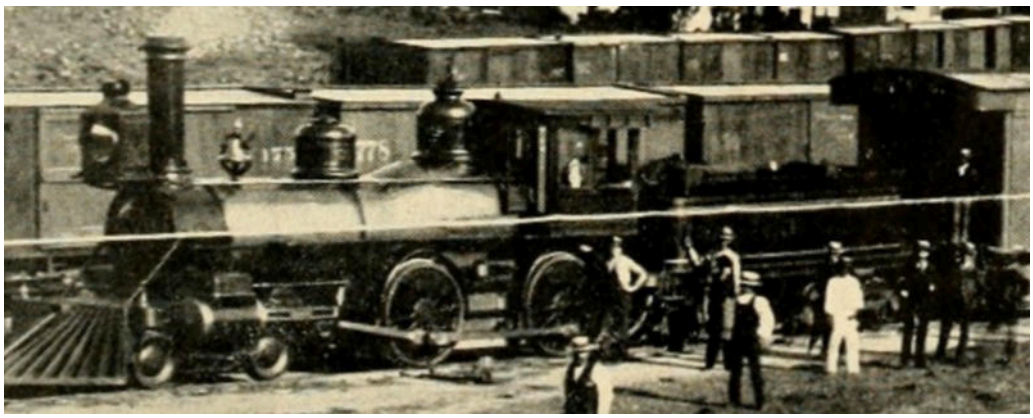
in shop, undergoing ordinary repairs. We have ample power to move double our present traffic.
And that for **1878** said:
MOTIVE POWER. Locomotives continue at the same figures given in my last report. Those on the road are all in excellent condition and hauling heavy trains; two have been partially rebuilt in our shops during the year ; two others are now in the machine and boiler shops undergoing complete renewal. We have ample power to move all the traffic at present.
In **1879** the report said:
MOTIVE POWER. Since my last report two new 16x24 freight locomotives, built for us at the Baldwin Works, Philadelphia, have been added to our stock. These are proving very serviceable, being able to haul just double the number of cars taken by our lighter engines, thereby reducing the train service considerably. One locomotive, No. 8, built in 1855, has been condemned and put out of service, leaving the number in active use at 13, and one in the shops rebuilding, being an ample supply for the present traffic.

4-4-0 d/w 54", cyls. 16x24", built by Baldwin in 1880 and 1882

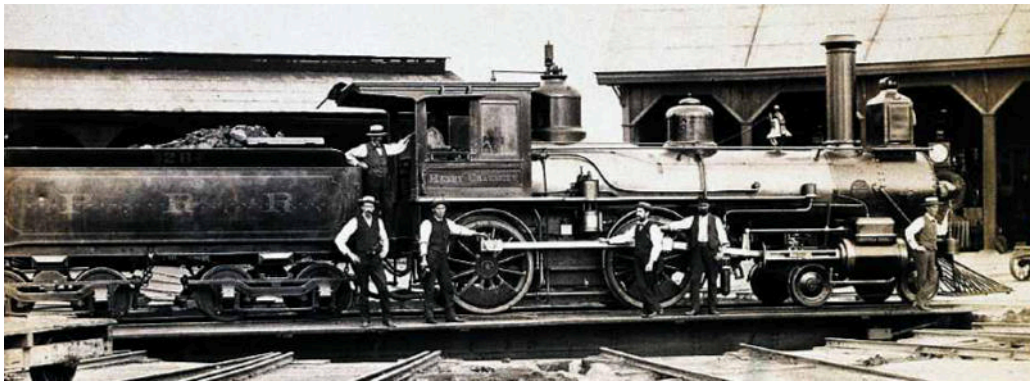
First two ordered for Panama RR Co. BLW class 08-26C nos. 231-232, 354-355, 398 and 401. Spec. sheets in vols. 9 p205, and 11 p75, but the latter is missing from the scanned volume. Diamond stack. First two arrived in early 1880 [1]. Connelly's BLW list says d/w of first two = 53". Note the photo below showing one of these engines named **'HENRY CHAUNCEY'** after one of the railway's founding directors. This suggests that others of this class might have been similarly named. The running numbers below may not be totally accurate; photos exist showing Baldwin 4-4-0s also carrying the numbers **24** and **28**. No names are given in the BLW register book entries for the first two of these, so the names may have been given later.

22	w/n 4920	Taken over by *CUCI* (see next section).
23	w/n 4923	Taken over by *CUCI* (see next section).
26	w/n 6492	
27	w/n 6493	
29	w/n 6890	Taken over by *CUCI* (see next section).
30	w/n 6923	Taken over by *CUCI* (see next section).

Four of these – from **23, 26, 27, 29** and **30** – supposedly survived into US ownership, when they were numbered **3, 18, 21** and **22**. This does not quite fit with the locos labelled above as having survived into *CUCI* times.

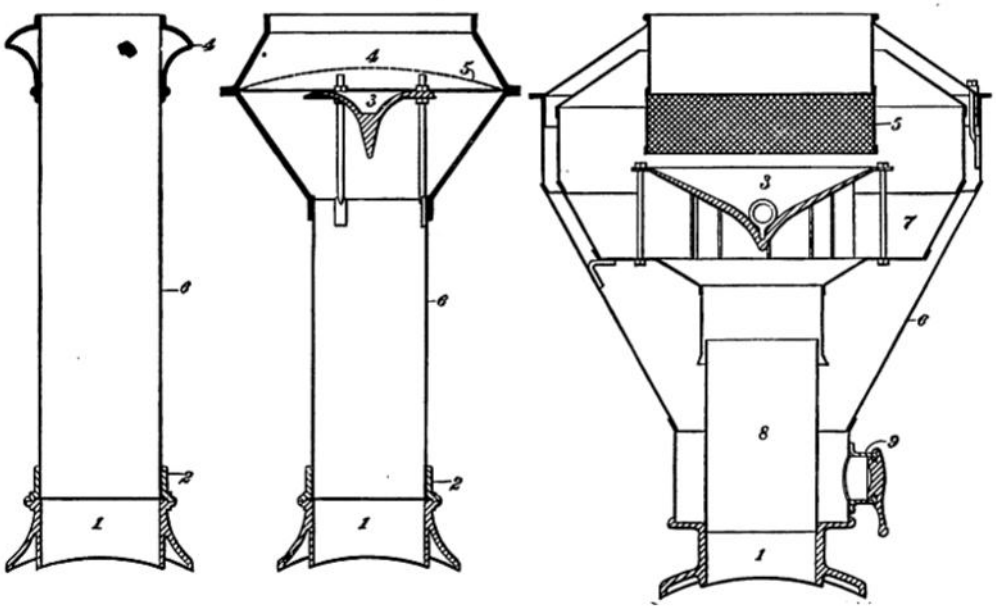


Supposedly a scene in Panama City in the 1880s, and apparently showing a Baldwin 4-4-0. Cropped from a photo in Saunders [1].

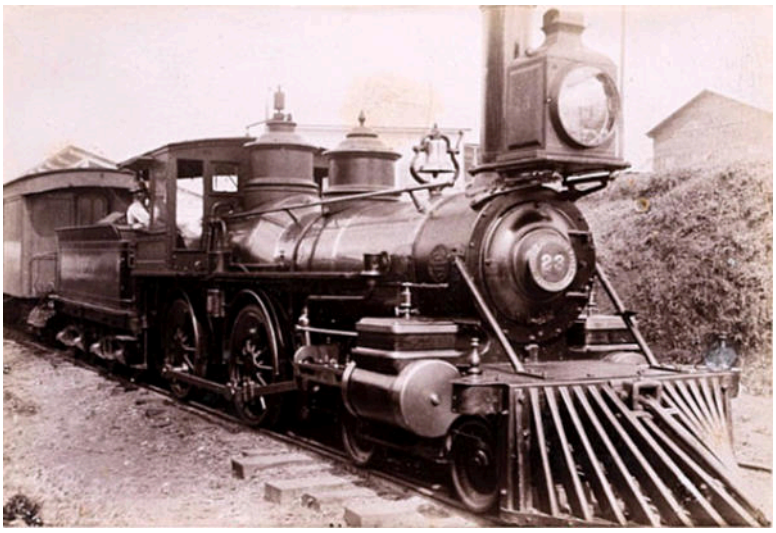


No. **28 'HENRY CHAUNCEY'**. The number **28** is very clear above the P. R. R. lettering on the side of the tender, but does not agree with the numbers listed above, or with the allocation, below, of the no. **28** to an 0-4-0T. Henry Chauncey had been one of the original promoters and then a director of the railroad. The extended smokebox may be a later replacement, as indeed may the domes, for Baldwin used 'Rogers style' ringed domes certainly into the early1880s [16]. Note also the straight stack rather than the diamond originally supplied.

This cropped enlargement facilitates viewing the running number at the mid-point of the tender collar, and the name on the cabside.



Alternative stacks available for Baldwin locomotives. From *The Baldwin Catalog of Locomotive Details* 1885 [16]. In this case these engines were supplied with the second, 'diamond', design but were later retro-fitted with the first, straight, style



A French photo of Baldwin 4-4-0 no. **23**, carrying a short smokebox rather than the longer one seen in the previous photo. The pattern of words on the plate on the smokebox side suggests that it is indeed a Burnham, Parry, Williams & Co. plate from Baldwin's 1873 to 1891 period, and the engine is carrying early Baldwin-style domes. The wheels too would appear to be twelve-spoked as per the Baldwin illustrated above rather than the Cooke fifteen spoke style.

Officers and Directors of the Panama Railroad.

DAVID HOADLEY, President.
JOSEPH F. JOY, Secretary.
GEORGE M. TOTTEN, Chief Engineer.
HENRY SMITH, Treasurer.
WM. PARKER, General Superintendent.

DIRECTORS.

WILLIAM H. ASPINWALL,	HENRY CHAUNCEY,
EDWIN BARTLETT,	HOWARD POTTER,
GOUVERNEUR KEMBLE,	SAMUEL W. COMSTOCK,
WILLIAM WHITEWRIGHT Jr.,	AUGUST BELMONT,
EDWARD CUNARD,	JOSEPH W. ALSOP,
THEODORE W. RILEY,	FREDERICK G. FOSTER,

DAVID HOADLEY.

If one director was celebrated on a locomotive cabside, then probably others were too. It would be no surprise if names in this list of early PRR officers and directors were found on the rest of the Baldwins or even on other types of loco.

0-4-0T d/w 14x22", cyls. 36", built by Baldwin in 1880, 1882, 1883, 1884 and 1887

Ordered for Saunders [] says: Renumbered under U. S. control **1-5**. All were rebuilt with diamond stacks but subsequently changed to the straight pattern. Carried 780 gals. water, 1,100 lbs. coal. Wood cab, saddle tank, Stephenson valve gear and would handle 2,040 tons on the level. Connelly's Baldwin list gives d/w as 38". BLW class 04-22C nos. 42, 45, 57, 55 and 76. Spec. sheets in vols. 10 p102, 11 p222, and 12 p49. Diamond stack, mark on tank: P.R.R. No names specified for locos. First three recorded as in use early in 1884 and giving very good service.

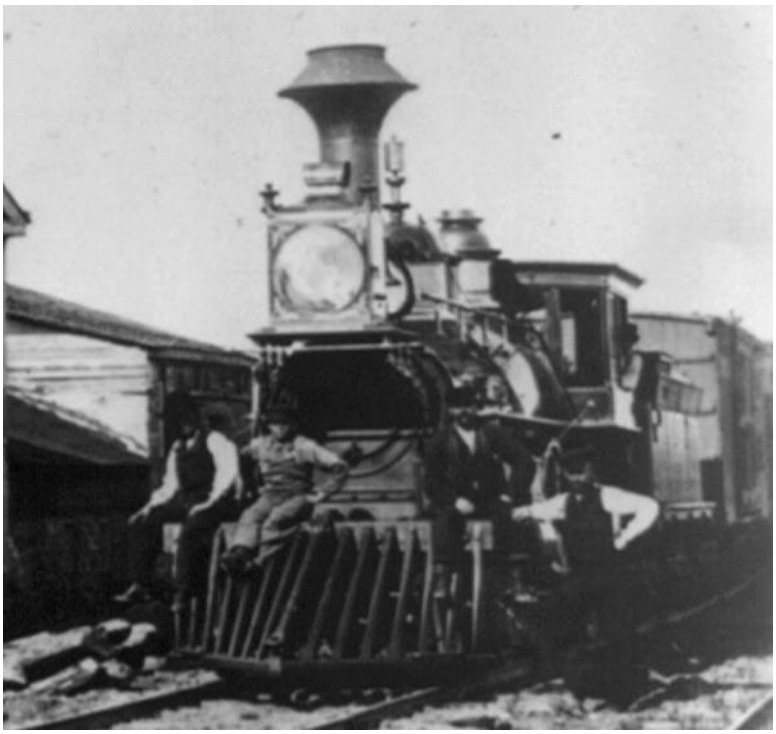
24	w/n 5330	Taken over by *CUCI* (see next section). Then to ICC as no. **1**.
25	w/n 6247	Taken over by *CUCI* (see next section). Then to ICC as no. **2**.
28	w/n 6852	Taken over by *CUCI* (see next section). Then to ICC as no. **3**.
31	w/n 7248	Taken over by *CUCI* (see next section). Then to ICC as no. **4**.
?	w/n 8859	Running number not listed on spec. sheet for this last engine. Taken over by *CUCI* (see next section). Then to ICC as no. **5**.

The French takeover

In late 1879 [1] the Panama Railroad was taken over by de Lesseps' Panama Canal co. The canal project would run parallel to the railroad, and would clearly involve very close cooperation with it, so ownership made a lot of sense.

Another puzzle loco

The following photo in the Library of Congress collections would seem to show an unidentified 4-4-0 supposedly in Panama.



Unusually, this engine seems to have a second forward-mounted steam dome which carries the whistle, as well as the more normal one over the firebox. This was not unknown, especially on locos by Rogers, but has not been spotted on any other Panama loco. Also, the diamond stack with a curved lower portion has not been seen previously in Panama, and the cabsides beneath the windows seem to be as shallow as those on the Portlands, though the smokebox base is different from that on those machines. The photo is from the Library of Congress collections.

Outside the PRR repair shops at Colón during the 1860s or '70s.
A Portland Company image copied by Thomas Norrell and identified
by John N. Stine. [R&LHSB no. 157 pp13-15]

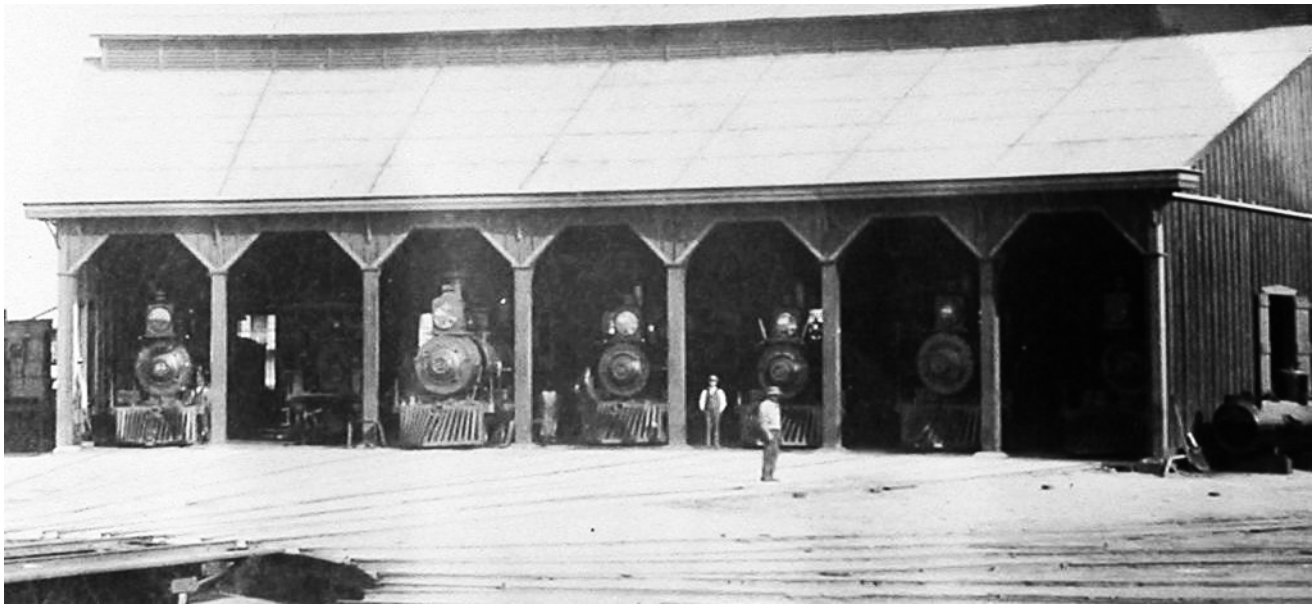
15.1.2 The Panama Railroad under French ownership

1879-1904

(The owners being *La Compagnie Universelle du Canal Inter-oceanique (CUCI)* 1881 - 1889 and the replacement *Compagnie Nouvelle du Canal de Panama* 1894-1904)

Background

Gauge 1524 mm. The French, in the form of Ferdinand de Lesseps' Panama Canal Company, had purchased the railroad company in late 1879. However it was not until 1881 that the canal construction project began under *La Compagnie Universelle du Canal Inter-oceanique (CUCI)* . Incidentally, though now under French ownership, the railroad company continued for legal reasons to be managed from New York and in English, and therefore the locos purchased for use on the railway (as opposed to those for the canal construction) were all by US builders. One contemporary report does make a distinction between the air-brake-fitted Baldwin engines that had been purchased directly by the railway company, and the non-air-braked other engines bought by the canal company.



Colón roundhouse, probably during the period of French operation.

PRR annual reports

The company annual reports continue to review the motive power situation in the same way, despite the change of ownership.

1880

MOTIVE POWER. Two new freight locomotives and one yard engine have been added to our stock during the past year, making a total of ten road engines (one of which is under repairs in the shop) and four yard engines. Two of the road engines are held in reserve and seven in constant use. Both the freight and switch engines, which have been built for us by the Baldwin Locomotive Works, are doing admirable service. We have ample power for road service, but two of our switch engines are deficient in poiver, and I would, therefore, respectfully recommend the purchase of another yard engine for the Panama station, similar to the one furnished in December last.

1881

MOTIVE POWER.

The number of locomotives continues at the same figure as given in my last Report, although two of them, being old and much worn, are not altogether serviceable. Two new road locomotives and one switch engine- have been ordered from the Baldwin Locomotive Works, Philadelphia, to meet future wants. The former will not arrive until January, 1883 ; the latter is expected in May next.

1882

MOTIVE POWER.

Two new freight locomotives and one yard engine from the Baldwin Locomotive Works have been added to our stock during the past year. We have at present twelve road engines (one of which is under repairs, and two others unserviceable for road purposes) and four yard engines. Of the latter, one is nearly worthless, and I would, therefore, respectfully recommend the purchase of another yard engine; also the purchase of two road locomotives, all of the same design as those delivered to us by the Baldwin Locomotive Works, the past year.

1883

MOTIVE POWER.

There are twenty-one locomotives actually in service, fifteen of which are road engines and six switching engines. This number includes seven road engines and two switch engines belonging to the Canal Company.. The road engines belonging to you are in excellent condition, - with the exception of Portland engine No. **13**, which is in bad order, and also No. **20**, same manufacture, which does not render very good service. Of the switch engines, No. **21**, likewise Portland, is in fair condition; the three Baldwin switch engines are excellent, and render us good service. This material enables us to meet the growing demands of our traffic; but we need an additional Baldwin switch engine for the Colon station, as those furnished by the Canal Company cannot make the curves leading to the wharves. … We have erected in our shops during the year four road engines and one switch engine, all Baldwin manufacture, and also fifteen locomotives for the Canal Company.

1884

MOTIVE POWER.

Twenty-seven engines are now employed in the service, 18 of which are road engines and 9 switching. Of the former, 6 are of the Baldwin manufacture, 7 Rogers and 5 Cooke. Of the switching engines 4 are Baldwin's, 3 Hinckley's and 2 Rogers'. The variety in the manufacture of these engines arises from the fact that many of them were ordered by the Canal Com-pany for their service and subsequent ly t rued over to the railroad. All these locomotives are in first-class condition and doing good service. We have erected, during the year, one Baldwin engine, two first-class coaches, twelve second-class, and two baggage, also fifty box freight cars, all of the Wagon manufacture. We have removed many old trucks and wheels, and replaced them with new, and our cars are now in good condition; excepting a few of the very old ones with iron frames, which have been in service upwards of twenty years, and should be condemned at once.

1885

MOTIVE POWER. Your Company now have on the Isthmus 17 road engines and 8 switching engines. Of the former 6 are of Baldwin's manufacture, 6 Rogers', and 5 Cooke's. • Of the switching engines, 4 are Baldwin's, 3 Rogers', and 1 Hinckley.

The Baldwin engines are those ordered by the Panama Rail-road Company, and are equipped with the Westinghouse air brake. The Rogers, and the Cooke engines were ordered by the Canal Company, and subsequently turned over by them to the Panama Railroad Company, and have no automatic brake attachment.

1886

MOTIVE POWER AND ROLLING STOCK. There are thirty-three locomotives in charge of this department, twenty-five of which are *road and eight switching engines. Of the former six are of Baldwin, six of Roger, one of Hinckley, and twelve of Cooke manufacture. All except Baldwin engines originally belonged to the Canal Coinpany. The Hinckley and seven of the Cooke engines were turned over to this department during the year. Of the switching engines, four are of Baldwin, three of Roger and one of Hinckley manufacture. The Roger and Hinckley engines are six-wheel connected, and originally belonged to the Canal Company. All of the engines are in good condition. I would recommend the purchase of another switching engine of the Baldwin type now in use, as the engines we now have are all kept going continually and cannot be spared from the yard long enough for its to make necessary repairs. During the year we have put extension fronts on one Rogers, two Baldwin, and five Cooke road engines.

1887-1888

These annual reports not yet inspected.

1889-1891

These annual reports made no specific mention of the company’s locomotives.

1892

Our Rolling Stock in use has been well maintained,

LOCOMOTIVES.
Road Engines 27 Switch (engines) 11 Total number Locomotives 38

1893

Rolling stock actively employed, including all passenger cars, has been maintained in good condition, and all engines out of service have been well protected by paint and sheltered. Freight cars not in use for several years, owing to cessation of work on the Panama Canal, and which could not be protected from the weather, are now unserviceable by reason of decayed timber. I respectfully recommend that they be taken apart, and that all iron materials be stowed at our shops to be used gradually in the main-tenance of the freight cars in active service.

LIST OF ROLLING STOCK MAINTAINED, AND UNSERVICEABLE.
MAINTAINED.
Locomotives : Road engines 27 Switch engines 11 Total number Locomotives 38
Other Engines: Appleby steam crane 1 Industrial Works steam pile driver 1 Total number of other engines 2

1894

LIST OF ROLLING STOCK, SERVICEABLE AND UNSERVICEABLE.
SERVICEABLE.
Locomotives: Road engines 27 Switch engines 11 Total number of Locomotives 38
Other Engines: Appleby steam crane 1 Industrial Works steam pile driver 1 Total number of other engines 2

1895

LOCOMOTIVES Road engines 27 Switch engines 11

1896

LOCOMOTIVES
December 31 (1895): Road engines 27 Switch engines 11
December 31 1896: Road engines 26 Switch engines 11

Engine no. **14**, which was old and too weak, was dismantled, and its boiler used on the wharves at Panama. Its value will be deducted from construction account.

1897

LOCOMOTIVES
December 31 1896: Road engines 26 Switch engines 11
December 31 1897: Road engines 26 Switch engines 11

Nine locomotives… were thoroughly repaired during the year.

1898

LOCOMOTIVES
December 31 1897: Road engines 26 Switch engines 11
December 31 1898: Road engines 26 Switch engines 11

1901

LOCOMOTIVES
December 31 1900: Road engines 24 Switch engines 11
December 31 1901: Road engines 24 Switch engines 11

\In addition to ordinary running repairs, three of the older locomotives, which had been laid by some years ago, have been completely repaired and restored to service.

1902

LOCOMOTIVES
December 31 1901: Road engines 24 Switch engines 11
December 31 1902: Road engines 24 Switch engines 11

The running repairs upon the whole of the equipment have been promptly executed as required; in addition 4 switch engines received thorough overhauling, Engine No. 9 having a new boiler. Four road engines which had been ouut of service for many years were repaired thoroughly and put into use.

1903

LOCOMOTIVES
December 31 1902: Road engines 24 Switch engines 11

December 31 1903: Road engines 24 Switch engines 11

During the last year, Engines Nos. **2, 3, 10, 30, 34, 36** and **37** were thoroughly repaired; No. **10** having also receivedd a new boiler. Twenty-three others received ordinary running repairs; many of these will need new boilers during this year and the next.

Locomotives purchased by CUCI for its haulage operations on Panama RR tracks, in addition to those taken over from the previous administration.

0-6-0ST d/w 44", cyls. 15x22", built by Rogers in 1882 and 1883

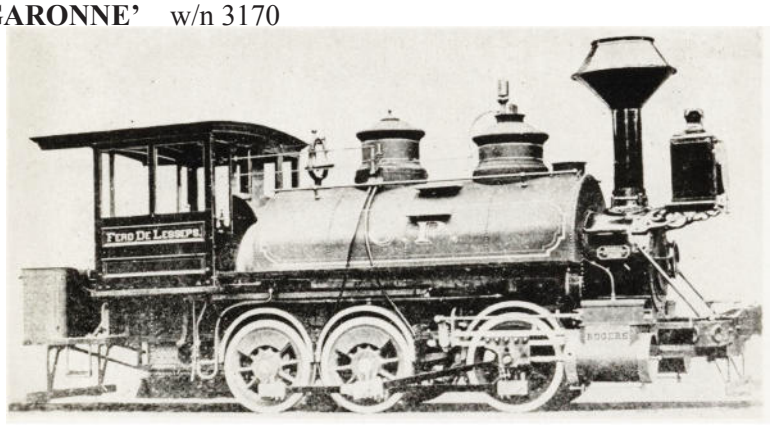
Ordered for Panama Canal Co. via W. R. Grace & Co. The names were changed before delivery.

1 'FERD. DE LESSEPS' later **1 'MEUSE'** w/n 3164

2 'V. DAUZATS' later **2 'GIRONDE'** w/n 3165 Thoroughly repaired in 1903.

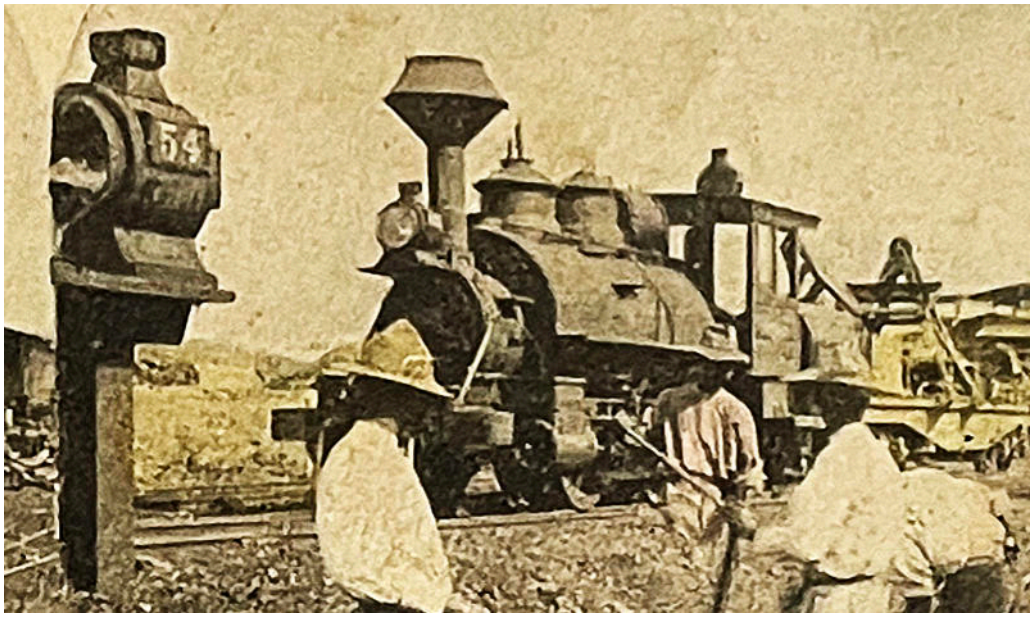
3 'A. RICHIER' later **3 'MOSELLE'** w/n 3167 Thoroughly repaired in 1903.

4 'G. SALETA' later **4 'GARONNE'** w/n 3170



No. **1 'FERDINAND de LESSEPS'** is seen in a Rogers builders' photo, after completion but before renaming as **'MEUSE'** and shipment to the isthmus. Note the letters *CP* on the saddle tank, presumably standing for *'Canal du Panama'* but also making the point that these were not originally ordered for ownership directly by the PRR.

One of the Rogers 0-6-0STs has come to grief sometime during the construction period.



Another Rogers 0-6-0ST as seen on a stereoscope 3D card of the period. The headlamp numbered **54** on the left must have come from the Danforth 4-4-0 with that number built in 1883.

0-6-0ST d/w 42", cyls. 15x22", built by Hinkley in 1882 and 1883

Ordered for Panama Canal Co. – de Lesseps. It may be that the first two of these were renamed after French rivers in the same way as the Rogers 0-6-0STs above.

5 'A. RECLUS' later **5 '?'** w/n 1584
6 'L. VERBRUGGE' later **6 '?'** w/n 1585
7 'MARNE' w/n 1586
8 'EURE' w/n 1587
11 'MEURTHE' w/n 1568

Four of them went to the US Administration: as PRR nos. **6, 7**, and as ICC **451, 452**?

The Hinkley 0-6-0STs can be distinguished by their three domes, the first of which is down on the boiler rather than up on the tank. Also the cab roof has a ventilated clerestory. This one is no. **5 'A. RECLUS'** as it left the factory.

A Hinkley 0-6-0ST standing in Colón (Aspinwall) station prior to 1885. It rather looks as though the rear wall of the cab has vanished to leave just fresh air and a single low handrail.

Another Hinkley 0-6-0ST, with the number possibly being **5**.

0-4-2ST d/w 40", cyls. 12x18", built by Porter in 1883 and 1885

Ordered for Albert Millet (first two) and N. I. Panama Canal Co. (remainder)

9 'SOMME'	w/n 540	New boiler fitted in 1902. Then to ICC as no. **401**.
10 'SAONE'	w/n 550	Thoroughly repaired and new boiler fitted in 1903. Then to ICC as no. **402**.
53 'La TOUCQUES'	w/n 696	NB. One of the Cooke 4-4-0s listed below was also numbered **53**. Then to ICC as no. **403**.
59 'La UANNE'	w/n 697	Then to ICC as no. **404**.
60 'La BIEURRE'	w/n 701	Then to ICC as no. **405**.
61 'La DHUIS'	w/n 702	Then to ICC as no. **406**.
62 'La LOING'	w/n 708	Then to ICC as no. **407**.
63 'L'OUREY'	w/n 709	Then to ICC as no. **408**.

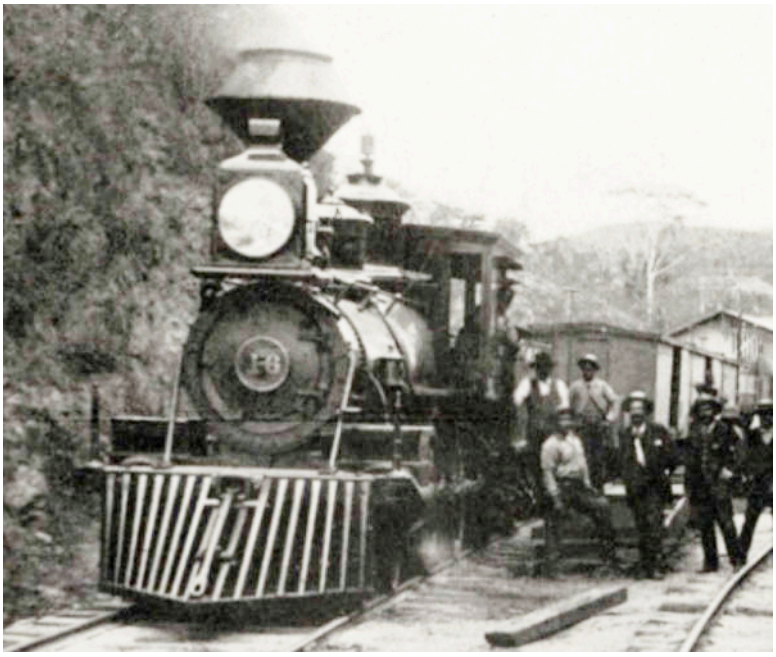
4-4-0 d/w 16x22", cyls. 54", built by Rogers in 1883

Ordered via W. R. Grace & Co. for Panama Canal Co.

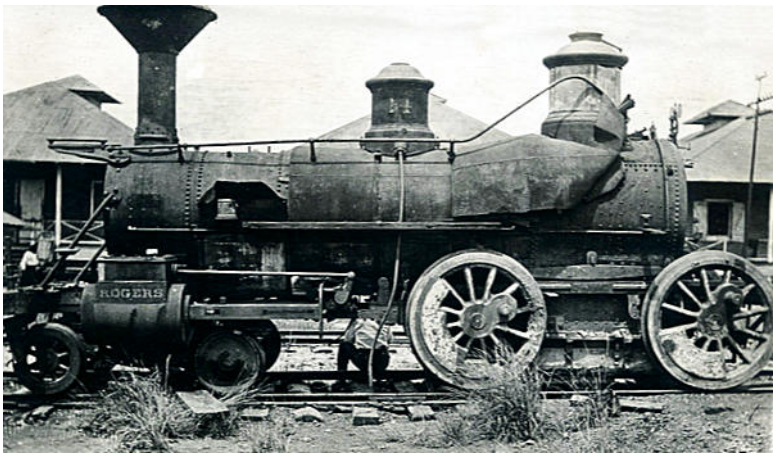
12 'SEINE'	w/n 3166
13 'LOIRE'	w/n 3168

14 'RHONE' w/n 3169
15 'ISERE' w/n 3336
16 'CHARENTE' w/n 3337
17 'TARN' w/n 3348
18 'DURANCE' w/n 3349

None of these were taken over by the US administration.



Rogers 4-4-0 no. **16 'CHARENTE'**.



Rogers 4-4-0 no. **14** at the end of its life, probably after the arrival of the Americans [17].

0-6-0ST d/w 44", cyls. 15x22", built by Rogers in 1883

Ordered for Panama Canal Co.

19 'VAR' w/n 3359
20 'DORDOGNE' w/n 3360
21 'ALLIER' w/n 3370
22 'CHER' w/n 3371
23 'LOIRET' w/n 3378
24 'AUBE' w/n 3379
25 'AISNE' w/n 3380
26 'AIN' w/n 3381
27 'YONNE' w/n 3387
28 'ORNE' w/n 3388
29 'AUDE' w/n 3389

30 'GARD'	w/n 3390	Thoroughly repaired in 1903.
31 'CREUSE'	w/n 3396	
32 'INDRE'	w/n 3397	
33 'DOUBS'	w/n 3398	
34 'MAYENNE'	w/n 3399	Thoroughly repaired in 1903.
35 'OISE'	w/n 3402	
36 'LOT'	w/n 3403	Thoroughly repaired in 1903.
37 'ARIEGE'	w/n 3406	Thoroughly repaired in 1903.
38 'AVEYRON'	w/n 3407	
39 'ARDECHE'	w/n 3408	
40 'VIENNE'	w/n 3409	

Seventeen of them went to the US Administration: fourteen to the PRR as nos. **8-20**, and at least three to the ICC as nos. **453, ???**, possibly **465** and **497**.

PRR Rogers 0-6-0STs nos. **1 'MEUSE'** (left) and **27 'YONNE'** (right).

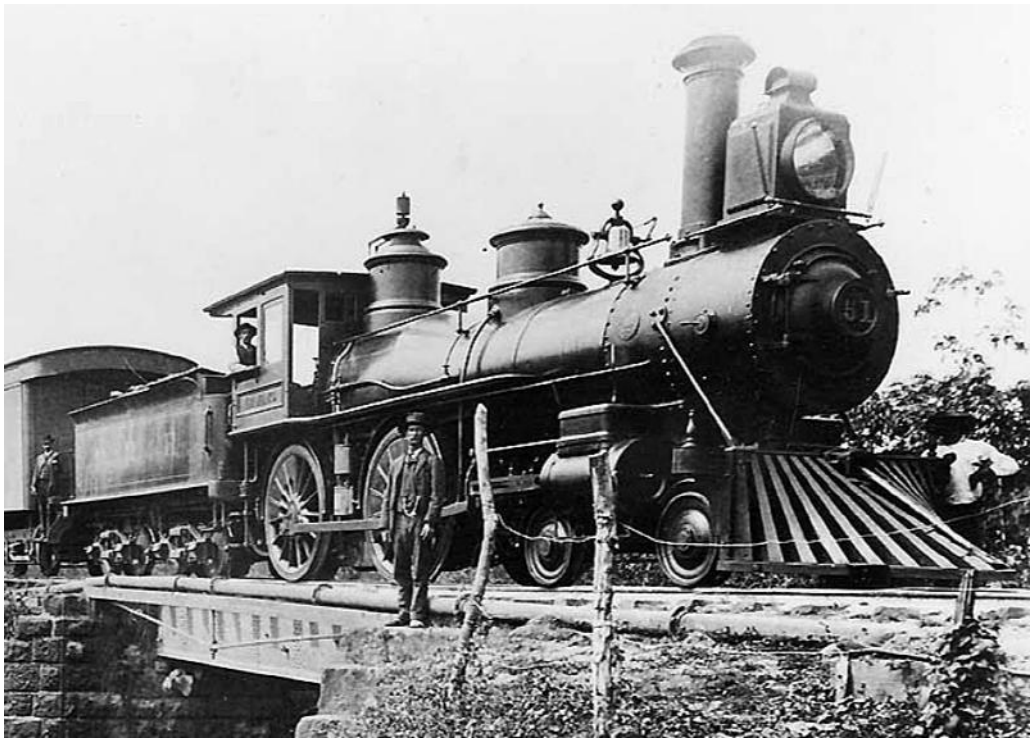
4-4-0 d/w 62 3/8", cyls. 17x24", built by Danforth Cooke in 1883

Ordered for Panama Railroad. Weber says **41** shipped 31st Aug. 1883, **42-48** shipped that September, and **49-57** shipped in October. Probably all named after French towns and cities.

41 '?'	w/n 1519	
42 '?'	w/n 1520	
43 '?'	w/n 1521	
44 '?'	w/n 1522	
45 '?'	w/n 1523	
46 'TOULON'	w/n 1524	
47 '?'	w/n 1525	
48 '?'	w/n 1526	
49 '?'	w/n 1527	
50 '?'	w/n 1528	
51 'Le MANS'	w/n 1529	
52 '?'	w/n 1530	
53 '?'	w/n 1531	One of the Porter 0-4-2STs was also numbered **53**.
54 '?'	w/n 1532	
55 '?'	w/n 1533	
56 '?'	w/n 1534	
57 '?'	w/n 1535	Became PRR no. **57**.

Nine of them went to the US Administration: six to the PRR as nos. **25, 27, 28, 30, 31, 36**, and three to the ICC as nos. **498, 499, 500**. Copeland says seven in total went to the US-run PRR and confirms no. **57** as the seventh. It has also been suggested that one was running as no. **503** for a time, possibly before being renumbered out of the 500 series to clear the way for reconstructed Belgian 0-6-0Ts.

No. **46 'TOULON'**.



No. **51 'Le MANS'**.

These two views, above and below, show 4-4-0s with clerestory roofs to their cabs – a feature not known from any of the locos listed previously. The picture above is from an undated tinted postcard showing a train in the main street of Colón, whilst that below shows the pay car train at the Gatún dam site during the US construction period. Saunders [1] states explicitly that that shown below was a Rogers engine, but whilst the domes certainly are of Rogers or Cooke style, the modified cab roofs and the straight stacks imply a certain amount of alteration

must have taken place. Additional confirmation would be valued. Also, it was not thought that any of the Rogers 4-4-0s had survived into the US era, whilst two Baldwins and three Cooke engines certainly did. In addition, the number of driving wheel spoked visibly in the picture above and the final photo further down suggest the fifteen spoke wheels of the Cooke machines rather than the twelve spoke Baldwin wheels.

The image above is from a US Library of Congress photo showing a clerestory-cabbed 4-4-0 at Colón station. It is unfortunately from a website where it had been significantly over-processed, thus losing much detail. I suspect that the original might enable a viewer to identify the loco number, but the Library of Congress scanning charges are too steep for me to take the risk. It seems likely that this image and the previous one were taken on the same occasion. It is also noticeable that the sand-dome seen in these two photos has a taller cylinder than those in the pictures of no. **46** and no. **51**, though the proportions of the steam dome do not seem to have changed.

Another cropped enlargement from a view of the pay train.
Charles Small [15] said that this was Cooke 4-4-0 no. **57**.
Certainly the single tender rivet line just below mid-height,
and the matching height of the bottom of the cab, recall the
Cooke locos rather than the zigzag rivet line of the Baldwins.

A workers' passenger train arriving at Guachapali in Panama City at the
end of the day. This image from the United Methodist Church digital photo archives
(Panama #02 page 155) shows one of the clerestory cab 4-4-0s with
the number **28** on the rear of its tender. This suggests that it was one
of the few which survived to be renumbered under the later US administration.

The full sequence

LIsted above are numbers **1** to **57** and **59** to **63**, with duplicate numbers **53**. It rather looks as though one of the latter should be **58**. However, whilst it is clear that all the earlier engines from the 1860s and '70s had been withdrawn by 1885, it is not clear how the Baldwin 4-4-0s and 0-4-0Ts built in the early 1880s were numbered once the later machines had arrived. Maybe there were two parallel numbering cshemes.

The fleet in the 1880s

The company annual report, written March 12, 1880, reported: "MOTIVE POWER. Since my last report two new 16x24 freight locomotives, built for us at the Baldwin Works, Philadelphia, have been added to our stock. These are proving very serviceable, being able to haul just double the number of cars taken by our lighter engines, thereby reducing the train service considerably. One locomotive, No. **8**, built in 1855, has been condemned and put out of service, leaving the "number in active use at 13, and one in the shops rebuilding, being an ample supply for the present

traffic.'

In the same way the report from March 1883 stated: "MOTIVE POWER. Two new freight locomotives and one yard engine from the Baldwin Locomotive Works have been added to our stock during the past year. We have at present twelve road engines (one of which is under repairs, and two others unserviceable for road purposes) and four yard engines. Of the latter, one is nearly worthless, and I would, therefore, respectfully recommend the purchase of another yard engine; also the purchase of two road locomotives, all of the same design as those delivered to us by the Baldwin Locomotive Works, the past year. "

March 1884: "MOTIVE POWER. There are twenty-one locomotives actually in service, fifteen of which are road engines and six switching engines. This number includes seven road engines and two switch engines belonging to the Canal Company. The road engines belonging to you are in excellent condition, with the exception of Portland engine No. **13**, which is in bad order, and also No. **20**, same manufacture, which does not render very good service. Of the switch engines, No. **21**, likewise Portland, is in fair condition; the three Baldwin switch engines are excellent, and render us good service. This material enables us to meet the growing demands of our traffic; but we need an additional Baldwin switch engine for the Colon station, as those furnished by the Canal Company cannot make the curves leading to the wharves. The number of miles run by these engines in 1883 was 286,435; in 1882, 193,473; increase, 92,962 miles. "

March 1885: "MOTIVE POWER. Twenty-seven engines are now employed in the service, 18 of which are road engines and 9 switching. Of the former, 6 are of the Baldwin manufacture, 7 Rogers and 5 Cooke. Of the switching engines 4 are Baldwin's, 3 Hinckley's and 2 Rogers'. The variety in the manufacture of these engines arises from the fact that many of them were ordered by the Canal Company for their service and subsequently turned over to the railroad. All these locomotives are in first-class condition and doing good service. We have erected, during the year, one Baldwin engine, two first-class coaches, twelve second-class, and two baggage, also fifty box freight cars, all of the Wason manufacture…"

March 1886: "MOTIVE POWER. Your Company now have on the Isthmus 17 road engines and 8 switching engines. Of the former 6 are of Baldwin's manufacture, 6 Rogers', and 5 Cooke's. Of the switching engines, 4 are Baldwin's, 3 Rogers', and 1 Hinckley. The Baldwin engines are those ordered by the Panama Railroad Company, and are equipped with the Westinghouse air brake. The Rogers, and the Cooke engines were ordered by the Canal Company, and subsequently turned over by them to the Panama Railroad Company, and have no automatic brake attachment."

In subsequent years, and through the 1890s, the reports have minimal detail, usually only recording the total number of locomotives as being 27 mainline engines and eleven switching locos. The figure of 27 later dropped to 26 and by 1900 to 24.

Poors Manual of Railroads 1885, p942, says that the railroad owned 21 locomotives at that time.

A puzzle loco

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This 4-4-0, seemingly on a canal excavation site, has not yet been identified.
It has Rogers / Cooke style domes, a short smokebox like the Rogers engines,

but a higher-mounted boiler than those machines. However, a later photo taken during the US construction period does show one of the Cooke 4-4-0s with a short smokebox, so the image here may similarly reflect that variation. The wagons behind may well date from the French era as they do not match the types commonly used later by the Americans.

15.1.3 *La Compagnie Universelle du Canal Inter-oceanique (CUCI)*

1881 - 1889

under administration

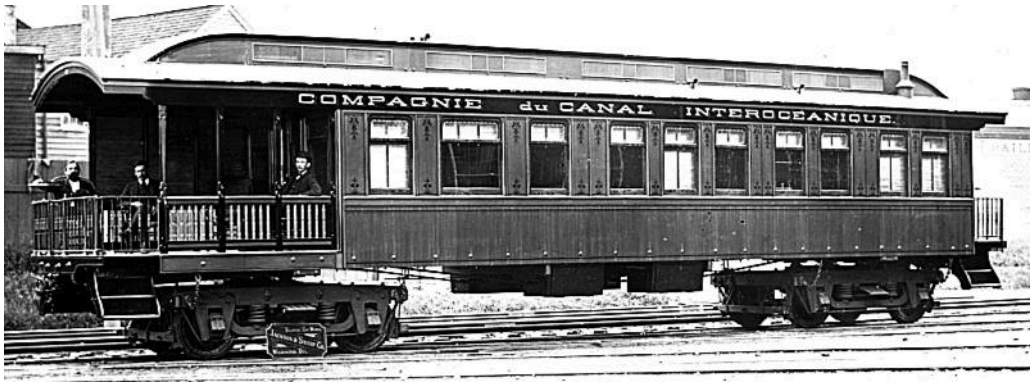
1889-1894

and the replacement *Compagnie Nouvelle du Canal de Panama*

1894-1904

Background

Gauge 1515mm, not exactly the same as the PRR, which ran on 5' 0" or 1524mm. Whilst the PRR was owned by the *CUCI* its management and operations remained separate from that of the canal construction proper, which was led by *CUCI* but partly contracted out to the contractor Couvreux et Hersent. As the work moved on – hindered hugely by climate, disease, corruption and a certain inability to recognise that the original plan for a sea level canal was impracticable with the funds available – so progress slowed. The *CUCI* was effectively bankrupt by 1889, and in 1894 a new company known in English as the New Panama Canal Co. took over. However, the task was still too great, and by the end of the 1890s the work sites were more or less silent.



A *CUCI* car built by Jackson & Sharp in Delaware, before shipment to the isthmus. Presumably this was an officers' inspection saloon of some kind, as the *compagnie* did not run passenger services as such.

The French and Belgian 0-6-0Ts

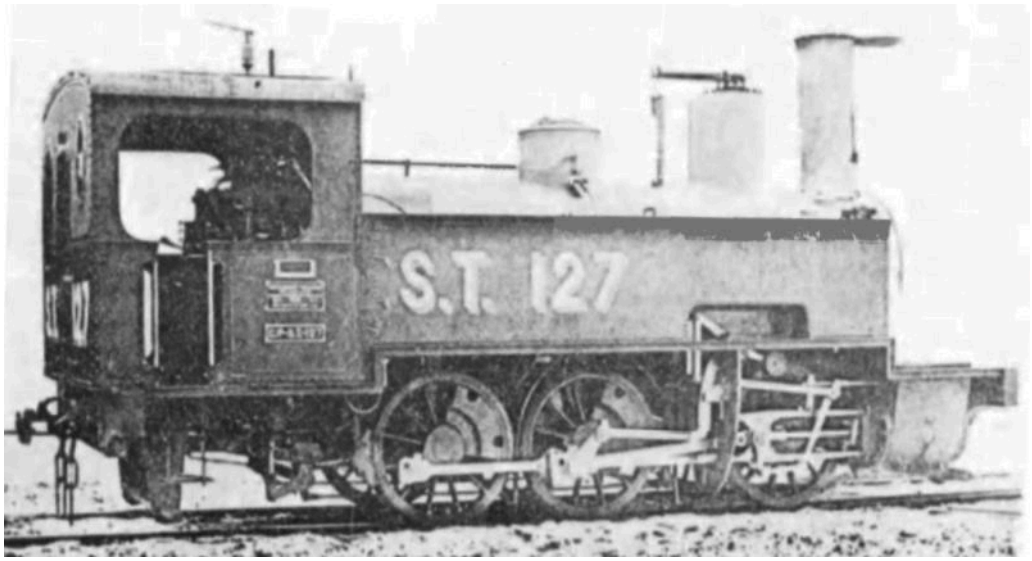
Charles Small [15] states that there were just two classes of 0-6-0T purchased, large and small, though as is well-known coming from four different Belgian and French builders. The situation is confused by different cab styles having been fitted, probably by different builders.

However, there is still considerable confusion over which locos were small and which were large. Small has all the Franco-Belge engines except nos. **565-589** as being of the larger type with 400x600mm cylinders and weighing 35

tonnes, whilst all the other machines from whichever builder were smaller and with cylinders 390x495mm, weighing 25.75 tonnes. Driving wheels were apparently 1200mm for both types.
Examination of photographs shows two distinct types:

A

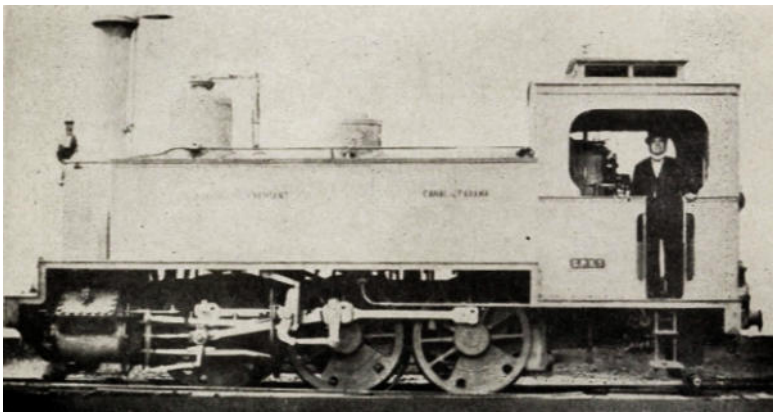
The first type has a bigger gap between the first and second pairs of driving wheels, a cut-out at the bottom of the tanks to accommodate the weigh shaft, a running plate that drops to buffer beam height immediately at the front of the tanks, and valve chests hidden within the cylinder cladding profile. The longer wheelbase would tend to support the suggestion that this was the larger of the two types. Also note the larger boiler which protrudes further above the tank tops, and the larger diameter chimney. None of these engines have been seen with the smaller cab openings. It therefore seems more likely that this was the type built solely by Franco-Belge. In end-on views these engines can be identified by their elliptical cab spectacles, as opposed to the square windows of the small locos.



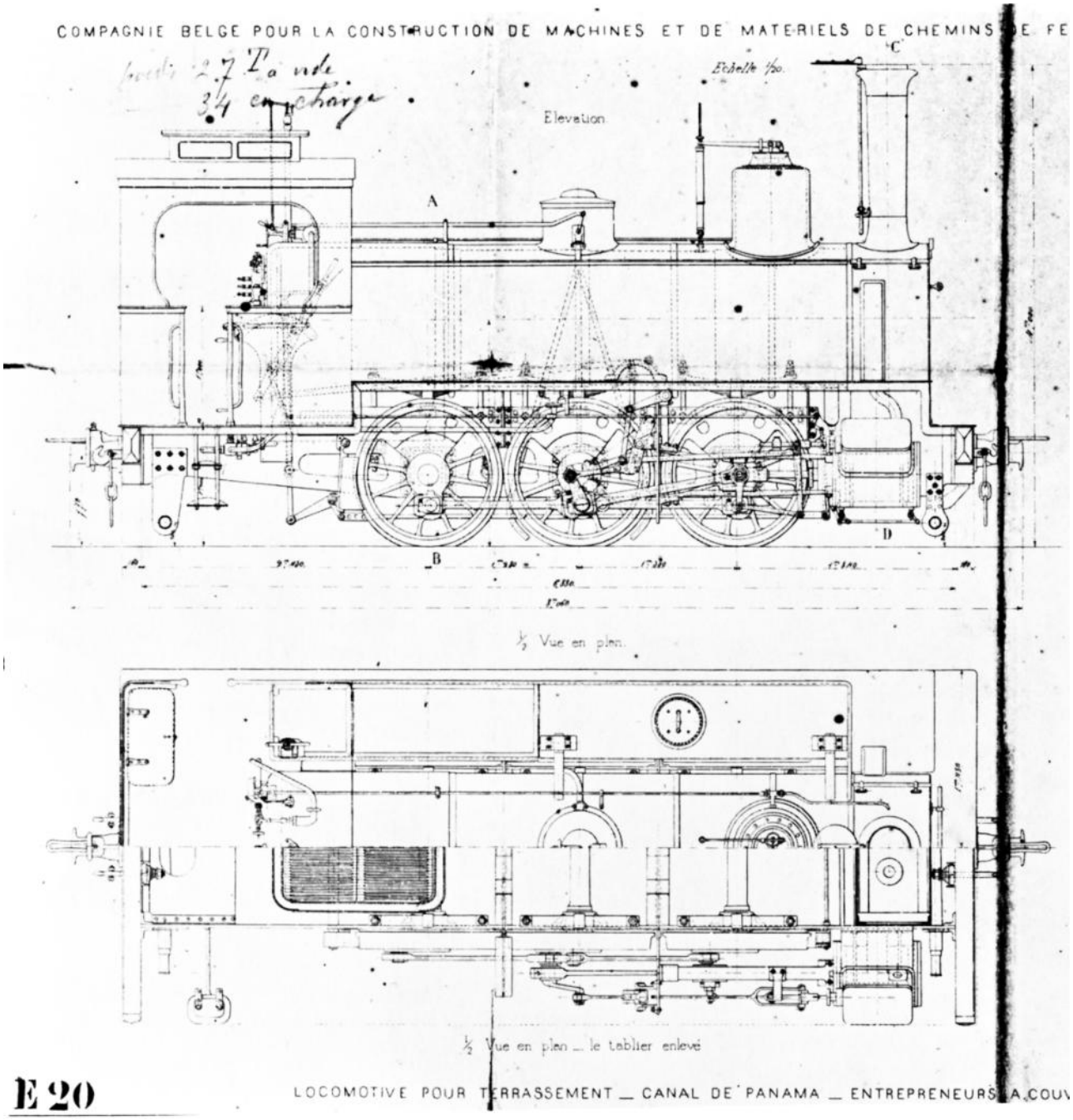
According to Andre Dagant's paper on Belgian steam locomotives [12], this was a Franco-Belge engine for Panama. The significance of the letters 'ST' on the tankside is not known, but the number presumably corresponds to the list below. In other words this was probably a type 27 machine. Note that these machines, unlike the type 88 engines from the same builder, had a much bigger gap between the first and second axles than between the second and third.

B

The second type has closely spaced driving wheels, simple rectangular tanks, a running plate continuing forward of the tanks and only stepping down at the very front of the smokebox, and outward-inclined valve chests that are rather shorter than the cylinders. Cabs on these locos vary in style, some having the large side openings and clerestory seen on the Franco-Belge drawing below, whilst others have a smaller opening shown on a St. Leonard catalogue sketch also displayed below. Careful measurement of the piston/crank throw shown on the F-B drawing suggests that it was around 500mm in total and that this was therefore the smaller of the two types. This suggestion is supported by the dimensions given for this design of engine in the St. Leonard catalogue for 1903.

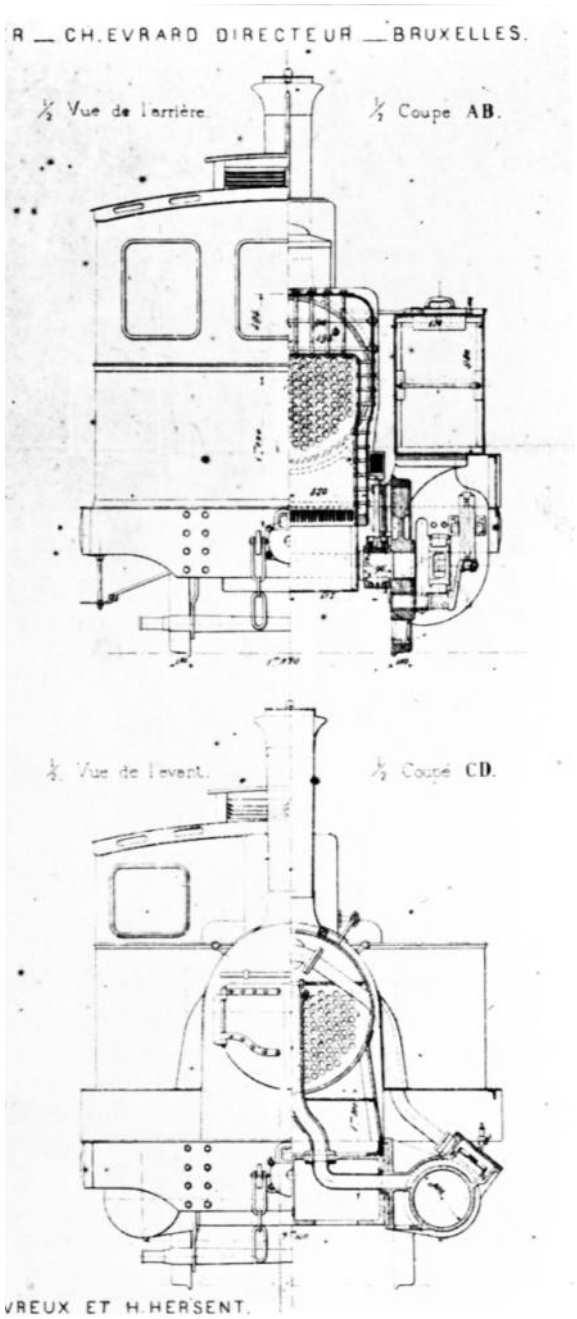


The smaller engines had slope-topped valve chests, with the running plate remaining at its high level until just behind the buffer beam, no visible cut-out beneath the tank, and in some cases a clerestory on the cab roof. These may well have been the type 88 engines. One is seen here numbered as **CPN1**.

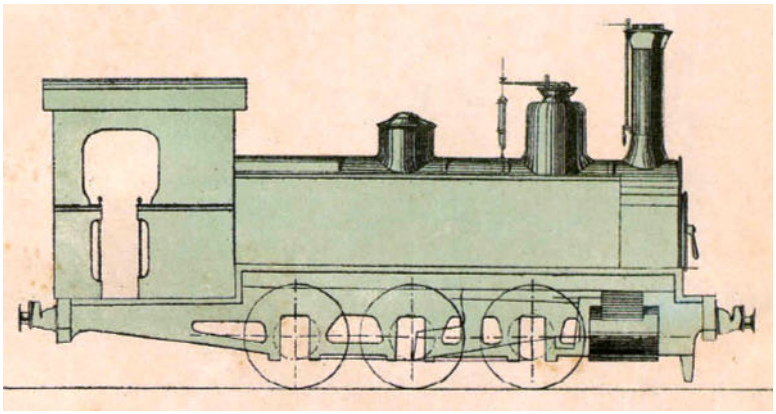


The Franco-Belge elevations and plan seen above and below were

published by Charles Small [15]. They have been divided for the current publication to facilitate their display at a larger size.



Here is a part photo of loco no. **178**, supposedly built by Franco-Belge. However, it has a small cab doorway of the type associated with the St. Leonard engines. This remains a mystery.



A sketch diagram, above, and a table of dimensions, below, for these 0-6-0Ts, as displayed in the 1903 St. Leonard catalogue. The running plate continues forward from the tank before dropping close to the buffer beam, just as on the Franco-Belge locos. However, the cabside opening is much smaller and there is no clerestory.

LOCOMOTIVE-TENDER

à 3 essieux accouplés

Surface de chauffe des Tubes	T =	66m²64	Diamètre des Cylindres	d =	0m400
Surface de chauffe du Foyer	F =	5m²44	Course des Pistons	l =	0m500
Surface de chauffe totale	S =	72m²08	Volume des Cylindres	v =	0m063
Surface de Grille	G =	1m²2250	Diamètre des roues motrices	D =	1m200
Nombre de Tubes		156	Effort de traction théorique		6660 K
Diamètre intérieur des Tubes		0m040	Effort de traction pratique		4329 K
Longueur des Tubes		3m400	Poids adhérent en charge		34200 K
Section totale des Tubes		0m²1950	Poids total à vide		27000 K
Timbre en atmosphères		10	Poids total en charge		34200 K
Rapport S : G =		50.92	Ecartement des essieux extrêmes		2m610
Rapport F : G =		4.44	Longueur totale		7m200
Rapport T : F =		12.25	Largeur totale		2m960
Contenance des soutes à eau		4000 L	Hauteur de la cheminée au-dessus du rail		4m000
Contenance des soutes à charbon		1500 K	Largeur de la voie entre rails		1m545

This smaller pattern 0-6-0T was rescued from beneath the waters of Gatún lake and is now plinthed with a couple of French open wagons at ???

The fleet numbering of these locos

As implied above, one of these two designs was built solely by Franco-Belge and the other by all four builders. The former was probably the larger design, and these are listed first below. The smaller locos follow them. The fleet numbers listed are those given by a number of earlier researchers, but there are many photos which shows engines bearing fleet numbers incompatible with these, and further research is required.
In particular, small cabside plates have been seen bearing designations such as **CPN1, CP95**, and **CP-ST127**.

The larger pattern locos, Franco-Belge type 27

0-6-0T d/w 1200mm, cyls. 400x600mm, built by Franco-Belge in 1881 (1-10), 1882 (11-16 & 23-32), 1883 (43-52), 1885 (91-120), 1886 (121-166) and 1887 (177-201)

Ordered for *Canal de Panama*. *Type 27 machines de terrassement* of the *Societe Franco-Belge*. Copeland says most built at La Croyere in Belgium but nos. **91-100** (FB nos. 528-537 built at Raismes in France. All these tank locos were built for 1515mm gauge, rather than 1524 and therefore could not be used on the PRR. Many apparently remained crated. M. F. Achard, quoted in Saunders [1] suggested that no more than eighty of the eighty-eight locos listed below (I make the total eighty-seven) actually reached Panama, but he did not give any indication of what happened to the remainder.

1	w/n 373
2	w/n 374
3	w/n 375
4	w/n 376
5	w/n 377
6	w/n 378
7	w/n 379

8 w/n 380
9 w/n 381
10 w/n 382
11 w/n 407
12 w/n 408
13 w/n 409
14 w/n 410
15 w/n 411
16 w/n 412
(Nos. **17-22** were smaller pattern engines by Couillet, which see below.)
23 w/n 447
24 w/n 448
25 w/n 449
26 w/n 450
27 w/n 451
28 w/n 452
29 w/n 453
30 w/n 454
31 w/n 455
32 w/n 456
(Nos. **33-42** were smaller pattern engines by Couillet, which see below.)
43 w/n 466
44 w/n 467
45 w/n 468
46 w/n 469
47 w/n 470
48 w/n 471
49 w/n 472
50 w/n 473
51 w/n 474
52 w/n 475
(Nos. **53-62** were smaller pattern engines by Couillet, which see below.)
(Nos. **63-77** were smaller pattern engines by Cockerill, which see below.)
(Nos. **78-90** were smaller pattern engines by St. Leonard, which see below.)
91 w/n 528
92 w/n 529
93 w/n 530
94 w/n 531
95 w/n 532 (A type 27 engine numbered CP 95 became ICC no. **704**.)
96 w/n 533
97 w/n 534
98 w/n 535
99 w/n 536
100 w/n 537
101 w/n 538
102 w/n 539
103 w/n 540
104 w/n 541
105 w/n 542
106 w/n 543
107 w/n 544

108 w/n 545
109 w/n 546
110 w/n 547
111 w/n 548
112 w/n 549
113 w/n 550
114 w/n 551
115 w/n 552
116 w/n 553
117 w/n 554
118 w/n 555
119 w/n 556
120 w/n 557

(Nos. **121-145** were smaller pattern engines by Franco-Belge, which see below.)

146 w/n 616
147 w/n 617
148 w/n 618
149 w/n 619
150 w/n 620
151 w/n 621
152 w/n 622
153 w/n 623
154 w/n 624
155 w/n 625
156 w/n 626
157 w/n 627
158 w/n 628
159 w/n 629
160 w/n 630
161 w/n 631
162 w/n 632
163 w/n 633
164 w/n 634
165 w/n 635
166 w/n 636

(Nos. **167-176** were smaller pattern engines by St. Leonard, which see below.)

(Nos. **177-201** were smaller pattern engines by Franco-Belge, which see below.)

(Nos. **202-213** were smaller pattern engines by Cockerill, which see below.)

The smaller pattern locos, eg Franco-Belge type 88

0-6-0T d/w 1200mm, cyls. 390x495mm, built by Couillet in 1881 (17-42) and 1883 (53-62)

Ordered for Panama Canal construction. Supposedly of thirty tonnes weight.

17 w/n 587
18 w/n 588
19 w/n 589
20 w/n 590
21 w/n 591
22 w/n 592

(Nos. **23-32** were larger pattern engines by Franco-Belge, which see above.)

33 w/n 629
34 w/n 630

35 w/n 631
36 w/n 632
37 w/n 633
38 w/n 634
39 w/n 635
40 w/n 636
41 w/n 637
42 w/n 638

(Nos. **43-52** were larger pattern engines by Franco-Belge, which see above.)

53 w/n 702
54 w/n 703
55 w/n 704
56 w/n 705
57 w/n 706
58 w/n 707
59 w/n 708
60 w/n 709
61 w/n 710
62 w/n 711

0-6-0T d/w 1200mm, cyls. 390x495mm, built by Cockerill in 1885 (63-77)

Ordered for *La Cie. Universelle du Canal Interoceanique de Panama.*

63 w/n 1436
64 w/n 1437
65 w/n 1438
66 w/n 1439
67 w/n 1440
68 w/n 1441
69 w/n 1442
70 w/n 1443
71 w/n 1444
72 w/n 1445
73 w/n 1446
74 w/n 1447
75 w/n 1448
76 w/n 1449
77 w/n 1450

0-6-0T d/w 1200mm, cyls. 400x500mm(?), built by St. Leonard in 1885 (78-90)

Ordered for ?

Whilst the cylinder dimensions shown above were those listed in the 1903 St. Leonard catalogue, this may be a rounding of the original dimensions which may well have been the 390x495mm listed for the other manufacturers.

78 w/n 693

The *Bulletin du Canal Interoceanique*, in the supplement to issue 176, shows this engine as the last of the Cockerills rather than as the first by St. Leonard. However, that table has other mistakes so this may also be an error.

79 w/n 694
80 w/n 695
81 w/n 696
82 w/n 697
83 w/n 698
84 w/n 699
85 w/n 700
86 w/n 701

87 w/n 702
88 w/n 703
89 w/n 704
90 w/n 705

(Nos. **91-120** were larger pattern engines by Franco-Belge, which see above.)

0-6-0T d/w 1200mm, cyls. 390x495mm, built by Franco-Belge in 1886

Ordered for *Canal de Panama*. These were described as *type 88 machines de terrassement*. FB 637-661 were built at Raismes and the earlier batch at Croyere. Total fifty engines.

121 w/n 565
122 w/n 566
123 w/n 567
124 w/n 568
125 w/n 569
126 w/n 570
127 w/n 571
128 w/n 572
129 w/n 573
130 w/n 574
131 w/n 575
132 w/n 576
133 w/n 577
134 w/n 578
135 w/n 579
136 w/n 580
137 w/n 581
138 w/n 582
139 w/n 583
140 w/n 584
141 w/n 585
142 w/n 586
143 w/n 587
144 w/n 588
145 w/n 589

(Nos. **146-166** were larger pattern engines by Franco-Belge, which see above.)

0-6-0T d/w 1200mm, cyls. 400x500mm(?), built by St. Leonard in 1887 (167-176)

Ordered for ? Whilst the cylinder dimensions shown above were those listed in the 1903 St. Leonard catalogue, this may be a rounding of the original dimensions which may well have been the 390x495mm listed for the other manufacturers.

167 w/n 762
168 w/n 763
169 w/n 764
170 w/n 765
171 w/n 766
172 w/n 767
173 w/n 768
174 w/n 769
175 w/n 770
176 w/n 771

0-6-0T d/w 1200mm, cyls. 390x495mm, built by Franco-Belge in 1886

Ordered for *Canal de Panama*. These were described as *type 88 machines de terrassement*. FB 637-661 were built at Raismes. Charles Small [15] unlike M. Achard in paper [12] says this batch were to the larger design, but see note

below re no. **184**.

177	w/n 637	
178	w/n 638	
179	w/n 639	
180	w/n 640	
181	w/n 641	
182	w/n 642	
183	w/n 643	
184	w/n 644	A photo two pages further on shows that a loco **184** was definitely of the smaller design.
185	w/n 645	
186	w/n 646	
187	w/n 647	
188	w/n 648	
189	w/n 649	
190	w/n 650	
191	w/n 651	
192	w/n 652	
193	w/n 654	
194	w/n 654	
195	w/n 655	
196	w/n 656	
197	w/n 657	
198	w/n 658	
199	w/n 659	
200	w/n 660	
201	w/n 661	

Supposedly fifty-five out of the total of 137 F-B engines were put back to work by the Americans after 1904, no doubt by cannibalising the majority of the fleet to create workable composites.

0-6-0T d/w 1200mm, cyls. 390x495mm, built by Cockerill in 1887 (202-213)

Ordered for *La Cie. Universelle du Canal Interoceanique de Panama.*

202	w/n 1517
203	w/n 1518
204	w/n 1519
205	w/n 1520
206	w/n 1521
207	w/n 1522
208	w/n 1523
209	w/n 1524
210	w/n 1525
211	w/n 1526
212	w/n 1527
213	w/n 1528

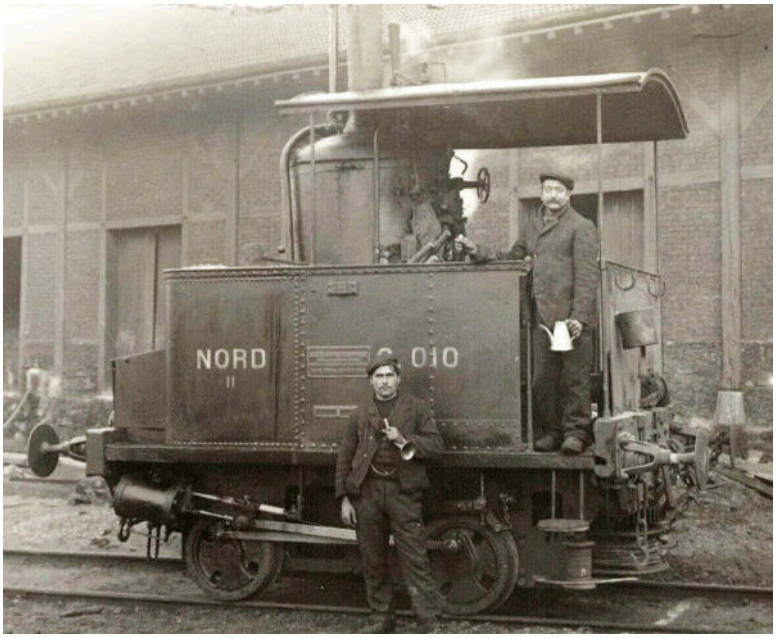
0-4-0VBT 'engines with winch' d/w ?, cyls. ?, built by Franco-Belge in 1883

During the French period there are clear references to a pair of '*Treuils roulants pour manoeuvres de gare*' or self-propelled winches for shunting in stations. In the US era that followed, there is also mention of two 'special' locomotives in use in the Gorgona and Paraiso workshops. These were always listed under the locomotive sub-heading in tables of rolling stock, and indeed at one point were designated 'locomotives with winch'. They would seem to have been more or less identical to a batch of locos which FB had supplied recently to the *CF du Nord* in France, which also had winches fitted. Small says that these had been built by Evrard (or Edwards) but in fact M.

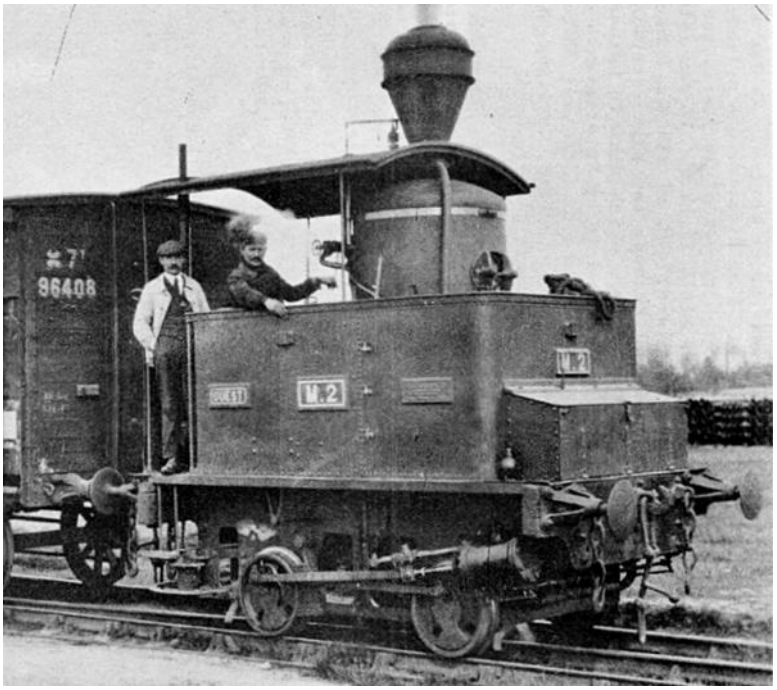
Evrard was a founder of the company later known as Franco-Belge.

? w/n 479?

? w/n 480?



One of the Franco-Belge winch-fitted VBTs supplied to the *CF de Nord* in France. It seems likely that the *CUCI* engines would have been very similar apart from in the couplings. Note the central winch drum and side-mounted guide rollers at bottom right.



This 1886 *CF Oeste de France* VBT, although built by L. Corpet rather than Franco-Belge, would seem to be of almost identical design, though possibly with slightly small driving wheels. It is illustrated here to show the opposite side and end of the engine.

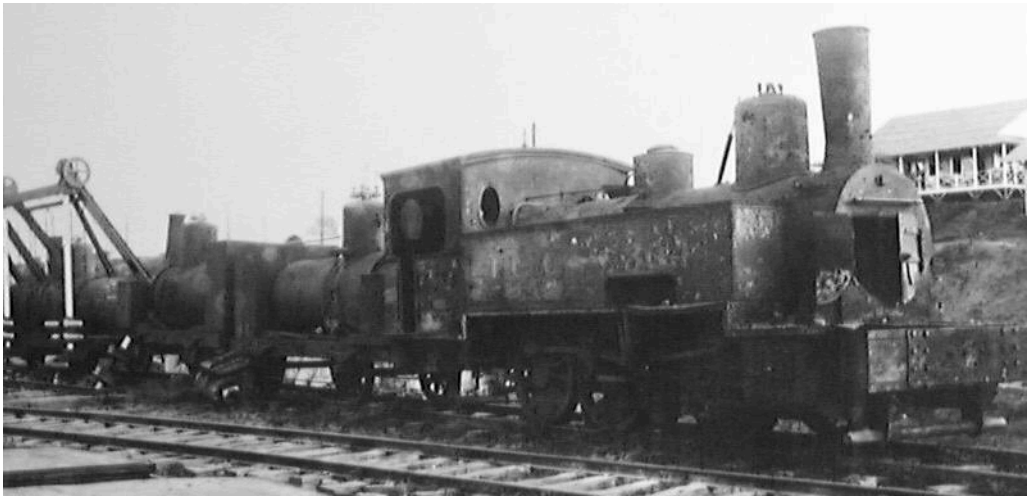
Forty-three out of the total of seventy-seven locos by Cockerill, Couillet and St. Leonard were put back to work by the Americans after 1904, no doubt by cannibalising the majority of the fleet to create workable composites.

The end of the French dream

The *CUCI* went bust in 1889, brought down by corruption, de Lesseps' stubbornness in persisting with the aim of a

sea-level canal, and a total lack of understanding of the physical and health problems of working in Panama. A successor company, the *Compagnie Nouvelle du Canal de Panama* (commonly known in English as the New Panama Canal Company) half-heartedly continued the work from 1894 but eventually sold out to the Americans.
It would seem that the majority of the French locomotives will have been lying out of use from 1889 until the Americans started to get into their stride after 1904.

A long line of derelict French locos is slowly entangled in the local vegetation near Empire.



A derelict Franco-Belge type 27 0-6-0T and a line of wagon-mounted steam rock drills. Note the running plate dropping down at the front of the tank, in contrast to the smaller FB type 88, Couillet, Cockerill and St. Leonard engines, and also the cut-out beneath the tank.

Several lines of locos are visible here, with Franco-Belge 0-6-0T type 88s or the equivalent in the nearest row, including no. **184** nearest to the camera.

Derelict French locos at Empire, as seen in a stereoscopic lantern slide. The engine in the foreground and that to the left are of the larger type, F-B type 27, whilst that a little further ahead from the camera is one of the smaller class (F-B type 88).

Two further images of the dump at Empire, above and below. Note that in the pic above, the left hand row behind the gentleman standing on one of the larger Belgian 0-6-0Ts contains a number of steam rock drills rather than locomotives.

A proposal by Baldwin

The collection of Baldwin erecting drawings held at the DeGolyer Library, SMU, Texas, apparently includes a proposal drawing (Index 519-6 Tracing 1340) for an 8-wheeled loco for the *CUCI*. Presumably Baldwin tendered for the supply of engines for the canal company at some pioint. The drawing has not yet been seen, and at this point no further details are known.

15.1.4 The Panama RR under US administration

1904-

Background

Whilst talks began between the French company and the US government in 1899, it took until 1904 before an agreement was signed. That meant that most of the French tank locos had stood idle for fifteen years – in a tropical climate and probably without any draining of boilers or other 'mothballing' – not the best way to ensure that continued use would be possible.

It is clear that the Americans saw the existing PRR company as extremely conservative, complacent and unprepared for the forthcoming necessary radical shake-up. Whilst they had gained control of the company, they gradually brought it closer to the ICC as a whole, for example by creating a single shared accounts organisation. From then on it becomes more-and-more difficult to separate the decision-making, and indeed the loco ownership.

The new directors inherited thirty-five locomotives (24 road and 11 switch apparently) when they assumed control of the railroad at the end of 1904. However, the Isthmian Canal Commission also reportedly took over the following from the 'New Panama Canal Co.' [ICC annual report 1904, p56]:

Franco-Belgian locomotives	212	213 had been built.
Decauville locomotives	14	14 built, and this confirms that all were received by the new administration.
American locomotives	34	These were presumably the PRR engines.
Locomotives with winch	2	Franco-Belge 1883, see above.

The comment was made that: " It is satisfactory to report that more of this material than was expected is either in serviceable condition or can be made so by reasonable repairs. The machine shops at Bas Matachin (later renamed Gorgona. MCC), while not equipped with modern tools, were found in good condition, and are now rendering excellent service in making these repairs. Much of the other materials and equipment, although not abreast with modern invention, can be made more or less useful. For instance, there are about 143 miles of 56-pound rail and a large amount of Decauville track and rolling stock. Probably upward of two-thirds of the 4,000 dump cars on the list can be repaired and remodeled so as to be put to good use. The same is true of many of the locomotives and much of the floating equipment. The locomotives, which are of both American and Belgian build, are light and antiquated, but still available." [ICC annual report 1904, p57]

"Of the locomotives 11 were in good condition, 3 in service needing light repairs, 13 in service needing general repairs, 5 out of service undergoing general repairs, and 3 condemned." [Ibid. p59]

Under the new management locomotives were owned in theory by either the PRR or the ICC, but were often transferred from one to the other, and maybe back again. They were labelled as either belonging to the Isthmian Canal Commission (ICC) or the Panama Railroad (PRR). The gauge of both was 5' 0" = 1524 mm.

Las Cascadas loco shed.

1 Locomotives already owned by the Panama RR and renumbered for continued use

0-4-0ST d/w ?, cyls. ?, built by Baldwin in the 1880s

Originally owned by the PRR and then by the *CUCI*. Copeland says these were numbered as ICC locos rather than PRR.

PRR **1**	w/n 5330 of 1880	Had been PRR/*CUCI* no. **24**.
PRR **2**	w/n 6247 of 1882	Had been PRR/*CUCI* no. **25**.
PRR **3**	w/n 6852 of 1883	Had been PRR/*CUCI* no. **28**.
PRR **4**	w/n 7248 of 1884	Had been PRR/*CUCI* no. **31**.
PRR **5**	w/n 8859 of 1887	Had been PRR/*CUCI* no. **?**.

0-6-0ST d/w ?, cyls. ?, built by Hinkley in 1883

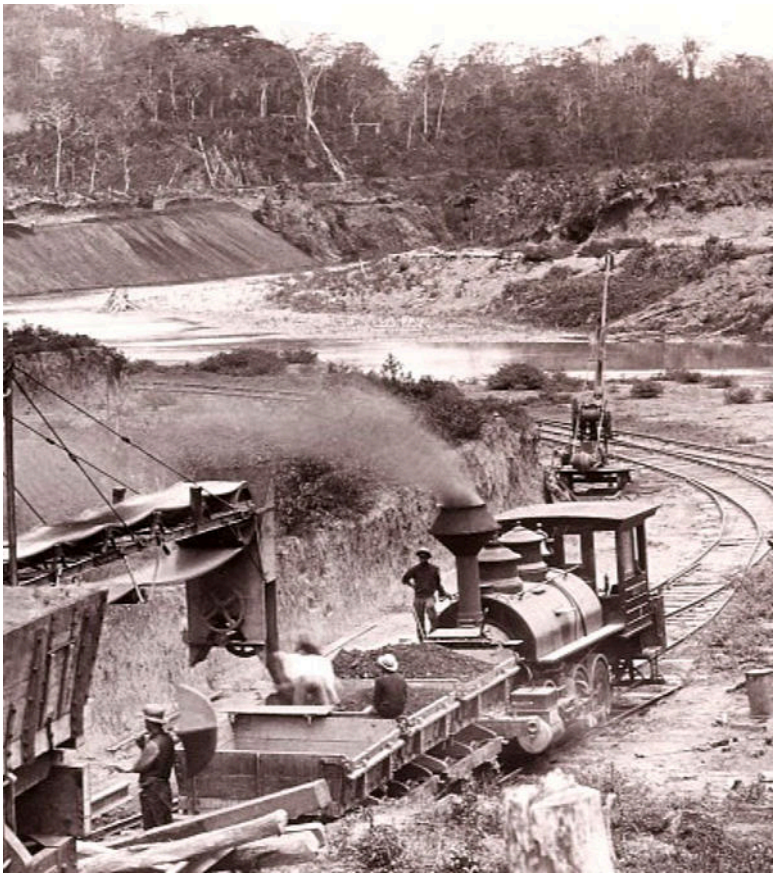
Originally owned by the PRR and then by the *CUCI*. These had been two from Hinkley 1584-7, ?, ?, and 1568, which had been numbered **5-11** previously.

PRR **6**	w/n ? see above.	
PRR **7**	w/n ? see above.	

0-6-0ST d/w ?, cyls. ?, built by Rogers in 1882

Originally owned by the PRR and then by the *CUCI*. These had been previously amongst nos. **19-40**, which were Rogers 3359-3360, 3370-3371, 3378-3381, 3387-3390, 3396-4499, 3402-3403, 3406-3409.

PRR **8**	w/n ?	Previous nos. and identities not precisely known.
PRR **9**	w/n ?	
PRR **10**	w/n ?	
PRR **11**	w/n ?	
PRR **12**	w/n ?	Gained a tender in later years.
PRR **13**	w/n ?	
PRR **14**	w/n ?	
PRR **15**	w/n ?	
PRR **16**	w/n ?	
PRR **17**	w/n ?	
PRR **18**	w/n ?	
PRR **19**	w/n ?	
PRR **20**	w/n ?	



A Rogers 0-6-0ST on a construction or excavation site. The year is unknown but the conveyor belt to the left suggests a relatively late date, ie. during the US era rather than the French one.

This Rogers 0-6-0ST has gained a bogie tender of a very professional looking design, perhaps from one of the 4-4-0 loco types.

4-4-0 dd/w 54", cyls. 16x24", built by Baldwin in 1880 and 1882

Originally owned by the PRR and then by the *CUCI*. These had been previously amongst nos. **22-23, 26-27, 29-30**, which were Baldwin 4920 and 4923 of 1880, 6492 and 6493 of 1882, 6890 and 6943 of 1882. NB Had they retained those numbers throughout their careers so far, for they duplicate numbers which had then almost immediately been allocated to Rogers 0-6-0STs in 1883?

PRR **18²** w/n ?
PRR **21** w/n ?
PRR **22** w/n ?

4-4-0 d/w ?, cyls. ?, built by Cooke in 1883

Originally owned by the PRR and then by the *CUCI*. These had been previously amongst nos. **41-56**, which were Cooke 1519-1534.

PRR **25** w/n ?
PRR **27** w/n ? Retained for pay and sightseeing trains.
PRR **28** w/n ?

PRR **30**	w/n ?	
PRR **31**	w/n ?	
PRR **36**	w/n ?	Retained for pay and sightseeing trains.
PRR **37**	w/n ?	
PRR **57**	w/n 1535	

However, what were nos. **23, 24, 26, 29, 32, 33, 34**, and **35**, and why did no. **57** retain its old number rather than being re-numbered into the main new sequence? At a guess, most of the missing ones will have been either Baldwin or Cooke 4-4-0s that lasted only a very short time and were gone by the time that Allen Copeland's primary source was compiled.

2 New locomotives purchased by the Panama Railroad Company

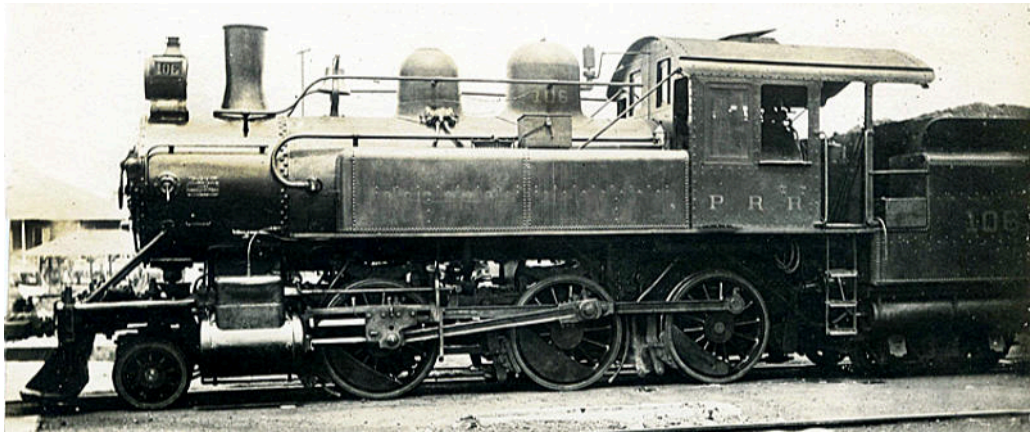
2-6-4T later rebuilt to 2-6-0 d/w 54", cyls. 19x26", built by ALCo Schenectady in 1905

Ordered for Panama RR, but proved to be too long and rigid and were therefore rebuilt to 2-6-0 in 1909. Note that these engines, unlike all the others purchased in the 1905-8 period, were bought by and for the Panama RR rather than for ICC use. Saunders states that nos. **101-112** gained slope-back tenders whilst nos. **113-124** had conventional cuboidal tenders, but that thereafter they were swopped indiscriminately.

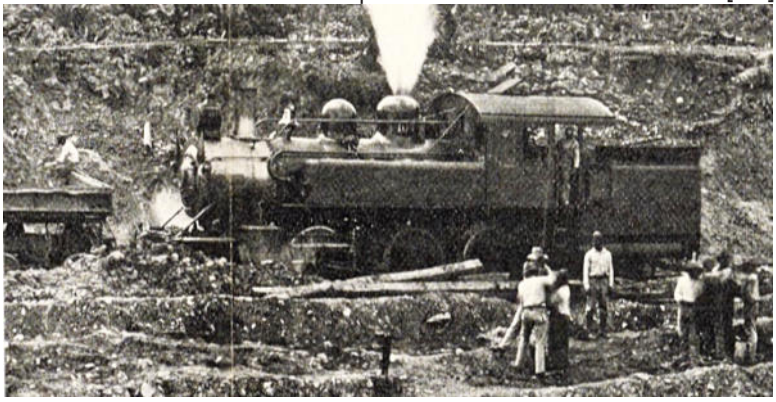
ICC **101**	w/n 38174	To U.S. Govt. ,Muscle Shoals, Alabama. (Nitrate Plant). To U.S. Engrs. Depot as no. **7531**, still at Muscle Shoals. To Birmingham Rail & Locomotive no. **1644**, Birm., Alabama. Solld 3/11/1927 to Northwestern RR of South Carolina no. **1116**, Camden, S.C.
ICC **102**	w/n 38175	Later to US Army no. **5028**, At Camp Benning, Ga. as QMC-USA no. **5028**, 1927. Converted to 0-6-0? Still at Ft. Benning, Ga. 2/6/1934.
ICC **103**	w/n 38176	Sold to A. B. Shaw, of Chicago, Illinois. Later to Chile Exploration Co. at Chuquicamata as no. **103**.
ICC **104**	w/n 38177	Sold to A. B. Shaw, of Chicago, Illinois. Later to Chile Exploration Co. at Chuquicamata as no. **104**.
ICC **105**	w/n 38178	Sold to A. B. Shaw, of Chicago, Illinois. Later to Genessee & Wyoming Ry., N.Y. no. **15**.
ICC **106**	w/n 38179	Sold to A. B. Shaw, of Chicago, Illinois. Later to Chile Exploration Co. at Chuquicamata no. **106**.
ICC **107**	w/n 38180	Sold to A. B. Shaw, of Chicago, Illinois. Later to Chile Exploration Co. at Chuquicamata as no. **107**.
ICC **108**	w/n 38181	Sold to A. B. Shaw, of Chicago, Illinois. Later to Chile Exploration Co. at Chuquicamata as no. **108**.
ICC **109**	w/n 38182	Sold to A. B. Shaw, of Chicago, Illinois. Later to Chile Exploration Co. at Chuquicamata as no. **109**.
ICC **110**	w/n 38183	Sold to A. B. Shaw, of Chicago, Illinois. Later to Chile Exploration Co. at Chuquicamata as no. **110**. See photo on following page.
ICC **111**	w/n 38184	Sold to A. B. Shaw, of Chicago, Illinois. Later to Chile Exploration Co. at Chuquicamata no. **107**.
ICC **112**	w/n 38185	Sold to A. B. Shaw, of Chicago, Illinois. Later to Chile Exploration Co. at Chuquicamata as no. **112**. Later to 108
ICC **113**	w/n 38186	Sold to A. B. Shaw, of Chicago, Illinois. Later to Chile Exploration Co. at Chuquicamata as no. **113**. Later to 109
ICC **114**	w/n 38187	Sold to A. B. Shaw, of Chicago, Illinois. Later possibly to Chile Exploration Co. no. **?** ???
ICC **115**	w/n 38188	Sold to A. B. Shaw, of Chicago, Illinois. Later to Chile Exploration Co. at Chuquicamata as no. **115**.
ICC **116**	w/n 38189	Sold to A. B. Shaw, of Chicago, Illinois. Later to Chile Exploration Co. at

		Chuquicamata as no. **116**.
ICC **117**	w/n 38190	Sold to A. B. Shaw, of Chicago, Illinois. Later to Chile Exploration Co. at Chuquicamata as no. **117**.
ICC **118**	w/n 38191	Sold to A. B. Shaw, of Chicago, Illinois. Later to Chile Exploration Co. at Chuquicamata as no. **118**.
ICC **119**	w/n 38192	Sold to A. B. Shaw, of Chicago, Illinois. Later to Chile Exploration Co. at Chuquicamata as no. **119**.
ICC **120**	w/n 38193	Sold to A. B. Shaw, of Chicago, Illinois. Later to Chile Exploration Co. at Chuquicamata as no. **120**.
ICC **121**	w/n 38194	Sold to A. B. Shaw, of Chicago, Illinois. Later to Chile Exploration Co. at Chuquicamata as no. **121**.
ICC **122**	w/n 38195	Sold to A. B. Shaw, of Chicago, Illinois. Later to Chile Exploration Co. at Chuquicamata as no. **122**.
ICC **123**	w/n 38196	Sold to A. B. Shaw, of Chicago, Illinois. Later to Chile Exploration Co. at Chuquicamata as no. **123**.
ICC **124**	w/n 38197	Sold to A. B. Shaw, of Chicago, Illinois. Later to Chile Exploration Co. at Chuquicamata as no. **124**.

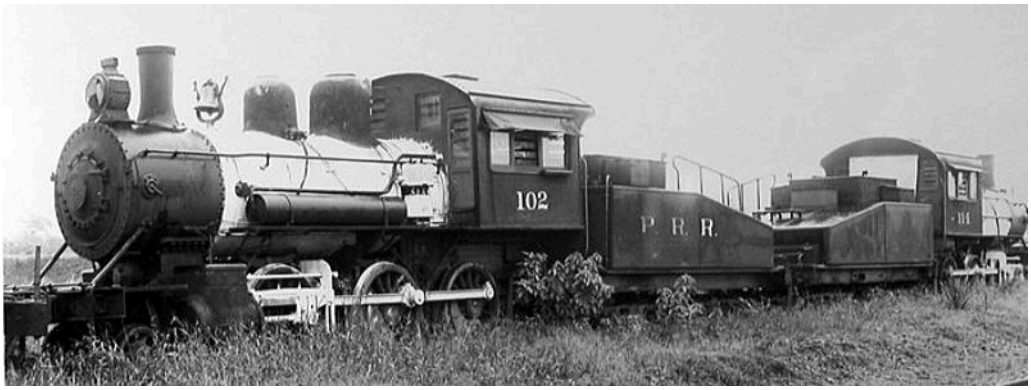
No. **101** as originally built.



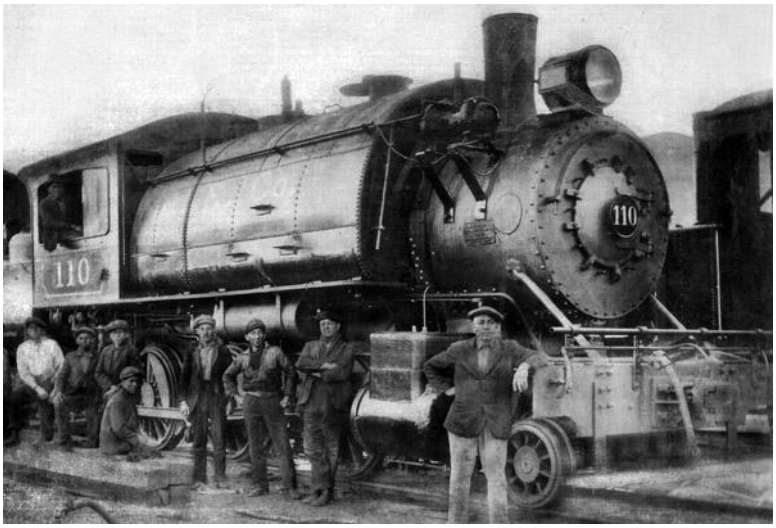
And from the left hand side, no. **106**, and seemingly
with a lower bunker and more open cab than in the view above [17].



A rare shot of a **101** class 2-6-4T in service, also with the modifications seen above.



No. **102** as rebuilt as a 2-6-0 tender loco in 1909. In this case the engine is seen lying out of use after the completion of the canal. Many of the stored locos seem to have had their boiler cladding removed, but the reason is as yet unclear.



A number of these engines were eventually sold for use at the huge Chuquicamata copper mine in northern Chile. By then they were in a 2-6-0ST configuration, but whether the rebuilding had been carried out before or after the move is not known.

2-6-0 d/w 63", cyls. 20x26" (sleeved later to 19x26"), built by ALCo Brooks in 1908-9

Ordered for Panama Railroad.

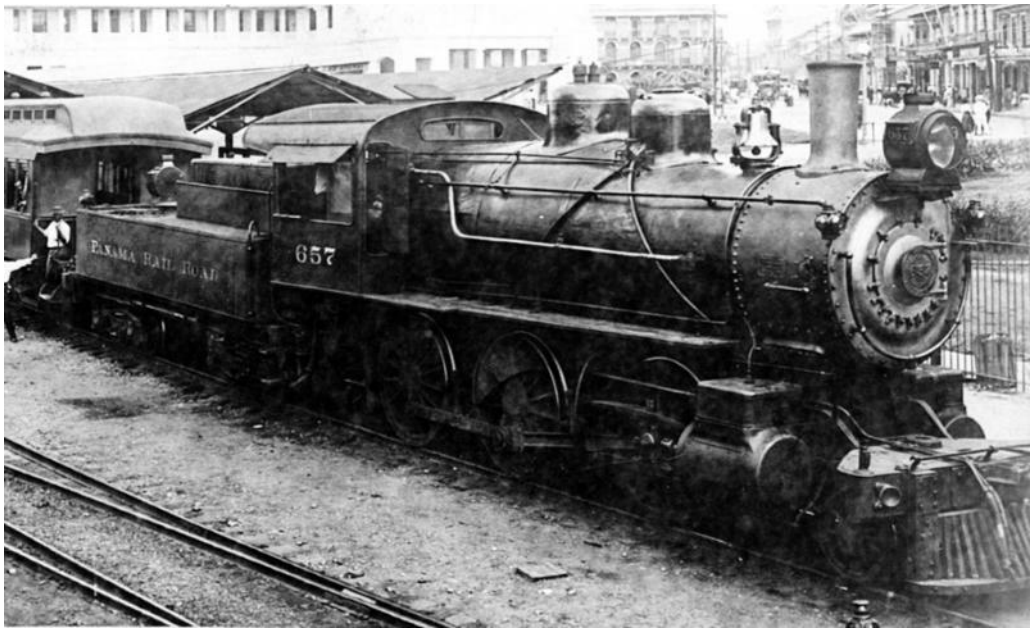
PRR **651**	w/n 45845	Scrapped 1934?
PRR **652**	w/n 45846	Fitted with compound air pump in order to cope with particularly long trains. Later
PRR **653**	w/n 45847	Scrapped 1934?
PRR **654**	w/n 45848	Scrapped 1934?
PRR **655**	w/n 45849	Scrapped 1934?
PRR **656**	w/n 45850	Fri Nov 7 1913, hauling a passenger train when hit by a work train on Panama to Bas Obispo branch. 6 deaths. including driver of other loco, and this driver injured Later
PRR **657**	w/n 45851	August 15 1910, pulling an extra freight north of Bohio ran into another extra resulting in death of a conductor and serious injury to fireman. Loco severely damaged [*Canal Record* v3 p403]. Scrapped 1934?
PRR **658**	w/n 45852	Later
PRR **659**	w/n 45853	Scrapped 1934?
PRR **660**	w/n 45854	Scrapped 1934?
PRR **661**	w/n 45855	Scrapped 1934 or 1947?
PRR **662**	w/n 45856	Scrapped 1947?

The last of the class 651 locos, no. **662,** pulls over a grade crossing in ??? whilst at the head of a ??? train.

No. **654** on a train, showing the flat-topped tender tank, with a relatively small bunker totally filled by the oil fuel tank.

Oil Burning Locomotives.

Six of the twelve new locomotives recently purchased by the Panama Railroad Company have arrived on the Isthmus, and the other six will come in two consignments, on ships due to arrive this month. These are the locomotives that are to use oil as fuel, and to this end they have been equipped with combination oil and water tanks, the oil capacity being 2,300 gallons and the water 5,000 gallons. The oil tanks can be taken from the tenders and the space they occupy can be used as coal bins in case it is ever desirable or necessary to use the locomotives as coal burners. The coal capacity is ten tons. The oil burners are of the Booth pattern, and they can be removed readily and replaced by grates at any time it becomes necessary to use coal. The locomotives are of the simple mogul type, cylinders 20 by 26 inches, tractive power, 26,000 pounds; steam pressure in boilers, 200 pounds to the square inch; drivers, 63 inches in diameter. They have the latest Westinghouse air brake equipment automatic couplers, and Cardwell draft gear. The first of them will leave the Cristobal shops this week, and all six of those now under erection will be in service within a month. When the twelve are put in service the twelve 100-class engines now in use will be retired to yard use, or will be equipped as oil burners. A 50,000-gallon oil tank will be erected at Cristobal to supply oil to the locomotives.



No. **657**. Note that for some unknown reason this machine does not have the raised running plate over an air reservoir that was visible on no. **662** in the previous photo.

PRR annual reports

1904

During this year the effects of the renewal of work on the canal became increasingly apparent, and the railway's general superintendent role, having become vacant, was now filled by the Chief Engineer of the Isthmian Canal Commission, Mr. John F. Wallace.

LOCOMOTIVES

December 31 1903: Road engines 24 Switch engines 11

December 31 1904: Road engines 24 Switch engines 11

Two new boilers were supplied for switch engines; nine locomotives received general repairs in addition to ordinary running repairs to nineteen others.

1905

LOCOMOTIVES

December 31 1904: Road engines 24 Switch engines 11

December 31 1905: Road engines 27 Switch engines 11

Under the plans and contracts referred to in the Company's repoprt for the first ten months of 1905, there has been received at the Isthmus, the following equipment:

24 Standard 80-ton Locomotives, which have been set up, and are now in use;

1906

LOCOMOTIVES

December 31 1905: Road engines 27 Switch engines 11

June 30 1906: Road engines 48 Switch engines 11

1907 (years now calculated July 1st to June 30th, instead of calendar years as previously)

In addition to the regular Maintenance of Equipment work, including extensive repairs to 18 Panama Railroad locomotives, the following new equipment haas been received and erected complete and placed in service: (list of rolling stock followed, but no locomotives). At the shops of the Railroad Company there have also been erected for the Isthmian Canal Commission:

14 114-ton Cooke Mogul Locomotives.

20 105-ton Baldwin Mogul Locomotives.

On November 15, 1906, the Railroad Company began using the shops, leased from the Commission, at Cristobal, since which time the vacated shops at Colon have been used only for the erection of cars.

LOCOMOTIVES

June 30 1906: Road engines 48 Switch engines 11

Changed from (road engines to switch engines) 22

June 30 1907: Road engines 26 Switch engines 33

1908

…additional equipment purchased during the previous year, viz:

24 locomotives,

Incidentally the 1908 report contains a detailed explanation of the works needed to relocate the railway away from the line of the canal.

LOCOMOTIVES

June 30 1907: Road engines 26 Switch engines 33

Destroyed during year 1 switch engine

Received during year 2 switch engines (this entry should probably refer to road engines in order to make the figures balance.

Changed from (road engines to switch engines) 1

Transferred to ICC 7 switch engines

June 30 1908: Road engines 27 Switch engines 26

The railroad's fleet during the canal construction period

By December 1905 the totals were again 27 road engines and 11 switchers, and six months later had reached 48 and 11, as the twenty-four new ICC-ordered 2-6-4Ts for the railway began to arrive.

In addition to the regular Maintenance of Equipment work, including extensive repairs to 18 Panama Railroad locomotives, the following new equipment has been received and erected complete and placed in service :

100 Roger Ballast Cars, 80,000 lbs. capacity.
273 Box Cars, 80,000 lbs. capacity. } Completing order of 500 new box cars.
10 Stock Cars, 80,000 lbs. capacity. }
12 Caboose Cars.
2 Roger Ballast Center Plows.
7 First Class Coaches, length, 68 feet.
2 Second Class Coaches, length, 68 feet.
2 Baggage and Mail Cars, length 68 feet.
2 First Class and 8 Second Class Coaches and 2 Baggage Cars, on hand, being set up.

At the shops of the Railroad Company there have also been erected for the Isthmian Canal Commission :

14 114-ton Cooke Mogul Locomotives.
20 105-ton Baldwin Mogul Locomotives.
700 Lidgerwood Flat Cars, 80,000 lbs. capacity, extension sides.
126 Western Dump Cars, 80,000 lbs. capacity (on order for 800).

On November 15, 1906, the Railroad Company began using the shops, leased from the Commission, at Cristobal, since which time the vacated shops at Colon have been used only for the erection of cars.

The relevant page from the 1907 annual report.

During 1907 a decision must have been made to reclassify a substantial number of engines as switchers, however, as it is clear that 22 were reclassified, giving a total of 33 switching locos.

Exhibit N.

STATEMENT OF LOCOMOTIVE AND CAR E

	Locomotives.			Passenger Cars.						Freight Cars.			
	Road Engines.	Switch Engines.	In I. C. C. Service.	Special.	First Class.	Second Class.	Baggage.	Baggage and Mail.	Hospital.	Box.	Coal.	Flat.	Local Express.
Stock on June 30, 1907.....	26	33	—	5	17	21	4	4	2	1010	144	41	21
Destroyed during year.....	—	1	—	—	—	—	—	—	—	14	38	29	2
Received during year.....	—	2	—	—	—	—	—	—	—	—	—	—	—
Changed from another class.	1	—	—	—	—	1	—	1	—	—	—	23	2
Changed to another class....	—	1	—	—	1	—	1	—	—	—	—	—	—
Transferred to I. C. C.....	—	7	7	—	—	—	—	—	—	—	—	—	—
Stock on June 30, 1908....	27	26	7	5	16	22	3	5	2	996	106	85	21

The three left-hand-most columns of numbers show the fleet of locomotives in mid-1908. Note that the word 'destroyed' can mean generally scrapped, wrecked, or otherwise lost from active service. It doesn't have any more specialised connotations.

Additions to Panama Railroad Locomotive Equipment.

Following the recent retirement of a great many locomotives from dirt train service in connection with dry excavation for the Canal, 10 of the 301-class locomotives, and locomotives No. 209 and No. 285, have been transferred to the Panama railroad to supplant most of the older and smaller Belgian locomotives in its yard service. With the Class 651 oil-burning locomotives, which are in good condition, the railroad has now a total of 30 large locomotives in service. Two light, coal-burning locomotives of an old style, but fast on the road, No. 27 and 36, have been retained for service with the pay and sightseeing trains. Locomotive No. 652 has been equipped with an 8½-inch compound air pump, in place of the usual 9½-inch single pump, so that it may maintain effective pressure in the brake systems of long trains, and will hereafter be ordinarily used exclusively in freight service.

In 1913, ten of the 301 class locos were turned over to the Panama RR.

Converting P. R. R. Locomotives.

Eleven of the twenty-four 100-class locomotives, used in the freight and passenger service of the Panama railroad prior to the arrival of the new 600-class engines, have been converted at Cristobal shops, and the remainder are being converted at the rate of two or three a month. These locomotives were made by the Schenectady locomotive works and were of the suburban type, that is, the tender and locomotive were on one base. In the conversion the tender is placed on a double truck of its own, and the fuel storage has been made interchangeable for oil or coal. The remodeled engines will be put in service on the Canal and railroad construction work, and for that reason will use coal for the present, since there are no oil storage tanks accessible on the relocation work. One engine has been fitted for oil burning, however, as an experiment, and will be tested on the main line.

A note from the *Canal Record* of December 29th 1909.

Transfers from the ICC to the PRR in 1912

In the course of Congressional hearings on the estimates of canal expenditure in 1912, Colonel Goethals stated that 24 locomotives had been transferred to the PRR, seemingly without charge. The same hearings included the following

exchasnge:

Senator BRISTOW. You spoke of the locomotives and cars. Have you ever estimated what they would be worth? Could we not sell them?

Col. GOETHALS. It depends entirely upon the demand and use to which they are to be put. If Panama builds its road from David to Panama, which is under discussion and was under contemplation until a month ago, I hope to be able to sell to them all of our plant that they can utilize and, in fact, promised them that, unless Congress legislated to the contrary, I would let them have it at 50 per cent of cost to us. I would let them have steam shovels, locomotives, and cars such as they could utilize in the construction of that road at 50 per cent of cost to us. This would give us an excellent return on the cost of the machinery and would be a considerable saving to them. I have had offers for steam shovels from contractors in South America but they came at a time when we could not sell. Also one from the States.

Senator BRISTOW. The gauge is 5 feet?

Col. GOETHALS. Yes; but our locomotives and passenger cars have the axles so fixed that we can press the wheels down to standard gauge.

The CHAIRMAN. How far is it from David to Panama?

Col. GOETHALS. Three hundred and fifty miles.

The CHAIRMAN. Where is it?

Col. GOETHALS. It is on the other side of the Republic, near Costa Rica.

And sales during 1913

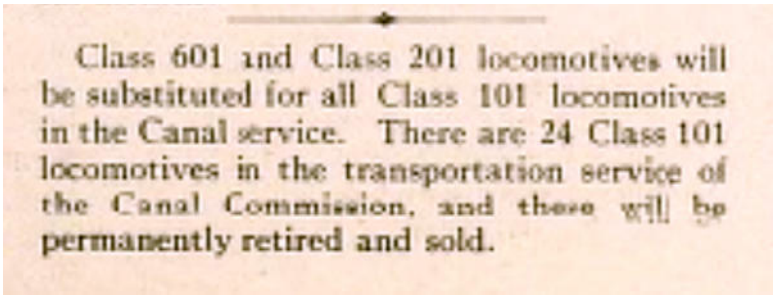
Practically all equipment has been continued in service during the past fiscal year and but little retired. What has been retired is limited to some old French locomotives, a few steam shovels, a few shop tools, and the 42-inch rolling stock formerly in use at the Porto Bello quarry. Equipment to the value of $32,000 has been sold and paid for. Equipment to the value of $18,670 was sold to the United Fruit Co. in June, 1913, but delivery has not yet been effected. The principal items in these sales include: 8 steam shovels; 10 Porter locomotives, 42-inch gauge; 24 old French locomotives; 77 cars, 42-inch gauge; 2 unloaders; 2 plows. Besides the items included in these sales there have been some miscellaneous equipment, such as boilers, tanks, engines, and a few shop tools, which have been disposed of.

While a portion of the equipment will be continued in use during the coming fiscal year, and a portion continued in use after the canal is completed, a large percentage of it will undoubtedly be retired during the fiscal year 1914. A catalogue has been prepared giving list and description of all American equipment purchased from the inception of the work up to June 1, 1913. It is intended to distribute this catalogue widely. The storage, disposition, or sale of this surplus and obsolete material and retired equipment during the fiscal year 1914 will be a difficult problem.

Respectfully submitted.

R. E. WOOD,
Chief Quartermaster.

Col. GEORGE W. GOETHALS, United States Army,
Chairman and Chief Engineer, Culebra, Canal Zone.



Class 601 and Class 201 locomotives will be substituted for all Class 101 locomotives in the Canal service. There are 24 Class 101 locomotives in the transportation service of the Canal Commission, and these will be permanently retired and sold.

A note from the *Canal Record* of November 19th 1913.

15.1.5 The Isthmian Canal Commission's own locomotives

1904-

Background

Gauge 5' 0". The ICC had clearly taken control of the *Compagnie Nouvelle du Canal de Panama* in 1904, and thus had gained ownership of the Panama RR too. However, despite the extremely close relationship between the ICC and PRR as mentioned at the beginning of the previous section, there was at least a nominal separation between the two fleets of locomotives and rolling stock. This section therefore lists all locomotives owned directly by the ICC, whether they originated from the PRR's earlier fleet, the French canal works, or were purchased new for the American canal project.

Engines taken over from the French

Whilst eventually a large number of the earlier locos were reconstructed and renumbered for canal construction service as listed below, during the first US years – say 1904 to 1907 – there seems to have been some improvisation. For example, this photo shows a Baldwin number **24** clearly in canal construction service. There has not previously been known to be a Baldwin 4-4-0 numbered **24**.

This rather looks like a Baldwin 4-4-0 numbered **24** in service early during the US administration and before these locomotive were renumbered. However, no such engine was originally present in the PRR fleet. Note that the pilot / cow-catcher has been replaced by a simple switchers' platform. The photo was found in the Library of Congress photo archives. Note also the left-hung door on what appears to be an extended smokebox.

2-6-0 d/w 54", cyls. 19x24", built by ALCo in 1906

Ordered for Isthmian Canal Commission.

ICC **201**	w/n 39092	Sold to Equitable Equipment Co., of New Orleans. Later to Delta Land & Labor Co. no. **208**, Conroe Lumber. Co., Tex. no. **208**. Source [13] says: 201 was rebuilt to the standard gauge to lumberer W T Carter & Brother (formerly Carter-Kelley Lumber Company) for their Moscow Camden & San Augustine railroad. Still bearing its ICC road number, the 2-6-0 was retired in 1962 and donated to the Grigsby Foundation. Meanwhile the Arkansas &

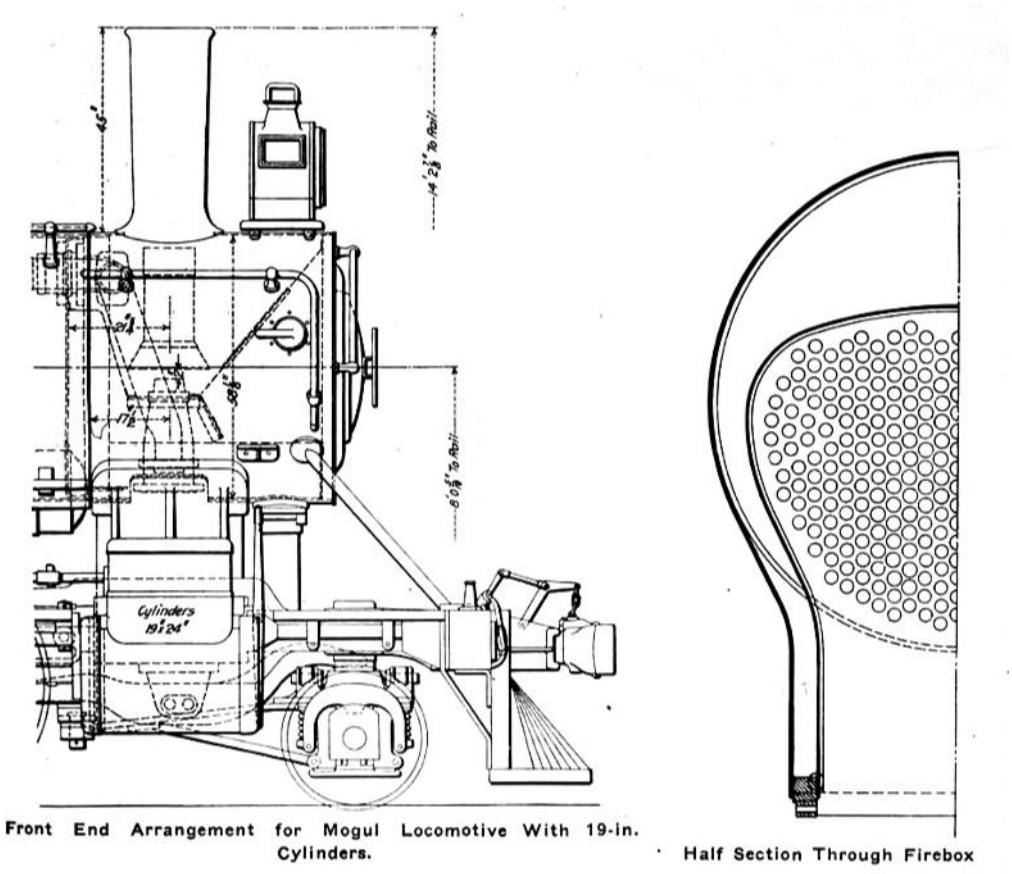
		Ozark Railway (formerly the Missouri & North Arkansas) had closed, but the railroad remained intact and was revived in 1978 as the Eureka Springs & North Arkansas,. The **201** ran as a wood-burner on the ES&NA until its boiler ticket ran out in the late 1990s. According to Wikipedia, the expense of burning 1½-2 cords per day played a role. She later went to the Reader Railroad to be restored.
ICC **202**	w/n 39093	Later to ?
ICC **203**	w/n 39094	Fri Nov 6 1913, hauling a work train when hit by a passenger train on Panama to Bas Obispo branch. 6 deaths. including driver. One *Canal Record* report states that this engine was to be stripped and then scrapped after that episode, but others report as follows: It was sold to Equitable Equipment Co., of New Orleans, and sold as W. T. Carter & Brother Lumber Co **201** in 1922. It was transferred as Moscow Camden & San Augustine **201** in March 1929, retired 1962 and donated to Grisby Foundation in 1970. It was leased as Scott & Bearskin RR **201** and later sold to Eureka Springs & North Arkansas as **201** in 1981.
ICC **204**	w/n 39095	Later to ?
ICC **205**	w/n 39096	Later to ?
ICC **206**	w/n 39097	Later to ?
ICC **207**	w/n 39098	Later to ?
ICC **208**	w/n 39099	Later to Alaska Engineering Commission/Alaska Railroad no. **208**, Scrapped 1930
ICC **209**	w/n 39100	Later to Panama RR as no. **209**, then to USWD according to source [13].
ICC **210**	w/n 39101	Later to ?
ICC **211**	w/n 39102	Later to ?
ICC **212**	w/n 39103	Sold to Equitable Equipment Co., of New Orleans. Later to Wier Long Leaf Labor Co. (Gulf & North Easter Rly) no **6**, of Wiergate, Texas. Source [13] says: 212 and 262 only left the ICC rails in 1940, when they were sold first to the Gulf Refining Company as their road numbers 4 and 6, then almost immediately to Wier Long Leaf Lumber. In 1937, that company was featured operating a "mighty sawmill" at Wiergate, west of Texas's Sabine River and "grinding away into the 'last great stand' of virgin Long Leaf Yellow Pine timber west of the Sabine."
ICC **213**	w/n 39104	Sold to Equitable Equipment Co., of New Orleans (no. **179**?), Later to Kirby Lumber Co., Texas, no. **91**. Scrapped 1956.
ICC **214**	w/n 39105	Later to Panama RR no. **214**, then to US War Department – Panama Canal Zone at Mount Hope in 1934.
ICC **215**	w/n 39106	Later to ?
ICC **216**	w/n 39107	Later to Panama RR no. **216**, Scrapped 1934?
ICC **217**	w/n 39108	Sold to Equitable Equipment Co., of New Orleans. Later to ?
ICC **218**	w/n 39109	Later to ?
ICC **219**	w/n 39110	Later to ?
ICC **220**	w/n 39111	Later to ?
ICC **221**	w/n 39112	Later to Alaska Engineering Commission/Alaska Railroad no. **221**, Scrapped 1936.
ICC **222**	w/n 39113	Later to ?
ICC **223**	w/n 39114	Sold to Equitable Equipment Co., of New Orleans, then sold later to ... Birmingham Rail & Locomotive as no. ?; then to T. R. Miller Mill Co., Ala. no.?; Scrapped 1948.
ICC **224**	w/n 39115	Later to Alaska Engineering Commission/Alaska Railroad no. **224**. Scrapped 1946 by Bethlehem Steel of Seattle.

ICC **225**	w/n 39116	Later to Alaska Engineering Commission/Alaska Railroad no. **225**. Scrapped 1936.
ICC **226**	w/n 39117	Sold to Equitable Equipment Co., of New Orleans, no. **182**, Later to 206 Delta Land & Timber/Lumber Co. no. **226**, then to Conroe Labor Co., Tex. no. **206**.
ICC **227**	w/n 39118	Sold to Equitable Equipment Co., of New Orleans. Later to Wichita Falls, Ranger & Fort Worth RR. no. **203**.
ICC **228**	w/n 39119	Sold to Equitable Equipment Co., of New Orleans no. **194**, Later to Delta Land & Timber/Lumber Co, no. **207**, Conroe Lumber.Co., Tex. no. **207**.
ICC **229**	w/n 39120	Sold to Equitable Equipment Co., of New Orleans. Later to Sabine & Neches Railway no. **122**.
ICC **230**	w/n 39121	Later to ? 1907
ICC **231**	w/n 39142	Later to ?
ICC **232**	w/n 39143	Later to US War Department; then to Panama RR as no. **232**. AC says was at PRR shops assigned to Mechanical Divn. in 1934 as no. **232**.
ICC **233**	w/n 39144	Later to US War Department; Later to Birmingham Rail & Locomotive as no. **1654**; then to T. R. Miller Mill Co., Brewton, Alabame as no. **9**. AC says another report had this engine sold to Bond-Foley Labor Co. of Bond Kentucky, as their no. **7**, and then scrapped 1933.
ICC **234**	w/n 39145	Later to ?
ICC **235**	w/n 39146	Later to US War Department
ICC **236**	w/n 39147	Later to US War Department
ICC **237**	w/n 39148	Later to ?
ICC **238**	w/n 39149	Later to Panama RR no. **238**; then possibly to US War Department – Panama Canal Zone, and used at Mount Hope by the Supply Divn., there in 1934 as no. **238**. Source [13] says it went to Kirby Lumber Co.
ICC **239**	w/n 39150	Later to Alaska Engineering Commission/Alaska Railroad no. **239** rebuilt as 0-6-0. Scrapped 1947 by Bethlehem Steel of Seattle. Source [13] says went on to Hillyer-Deutsch-Edwards of Oakdale, Louisiana.
ICC **240**	w/n 39151	Later to US War Department; Later to Southern Iron & Equipment, Atlanta, Georgia as their no. **2120**; then to Hillyer-Deutsc-Edwards Co., Louisiana. no. **239**.
ICC **241**	w/n 39152	Later to Panama RR no. **241**, then in 1934 to Panama Canal Commission no. unknown, then to McCleary Labor Co., Washington, no. **6**.
ICC **242**	w/n 39153	It was transferred as Alaska Engineering Commission **242** in 1915 and became Alaska RR **242** in 1923. It was wrecked in 1923 and scrapped in 1930. Source [13] says went to Hillyer-Deutsch-Edwards of Oakdale, Louisiana.
ICC **243**	w/n 39154	Later to Panama RR no. **243**, -> US War Department – Panama Canal Zone, at Fort Sherman, where in use as no. **243** in 1943; Later possibly to Southern Iron & Equipment, Atlanta, Georgia as their no. **2119**; then to Hillyer-Deutsc-Edwards Co., Louisiana. no. **100**, scrapped 1956?
ICC **244**	w/n 39155	Later to Equitable Equipment Co.
ICC **245**	w/n 39156	Later to US War Department, and at Camp Benning in Georgia in 1919; then to Holabird Depot, Baltimore, Maryland where rebuilt in 1942 for use at Louisiana Ordnance Plant, Shreveport, Louisiana as USTC no. 6988; For sale 1948, sold to Seymour Burton of Chicago, probably for scrap.
ICC **246**	w/n 39157	Later to A. B. Shaw.
ICC **247**	w/n 39158	Later to Alaska Engineering Commission/Alaska Railroad no. **247**, scrapped 1930.
ICC **248**	w/n 39159	Sold to A. B. Shaw; Later to Southern Iron & Equipment, Atlanta, Georgia

		no. **2161**; then to T. R. Miller Mill Co., Alabama. no. **10**. Scrapped 1948.
ICC **249**	w/n 39160	Sold to A. B. Shaw; Later to ?
ICC **250**	w/n 39161	Sold to Equitable Equipment Co.; Later to ?
ICC **251**	w/n 39162	Later to US War Department, Fort Benning, Georgia, there to 1934. Scrapped 1934?
ICC **252**	w/n 39163	Later to ?
ICC **253**	w/n 39164	Later to US War Department
ICC **254**	w/n 39165	Sold to Equitable Equipment Co.; Later to ?
ICC **255**	w/n 39166	Later to Panama RR no. **255**; then to US War Department – Panama Canal Zone no. **255**., and in use at Camboa by the Dredging Divn. in 1934.
ICC **256**	w/n 39167	Later to Panama RR no. **256**; then to US War Department – Panama Canal Zone no. **256**. At Mount Hope (Supply Divn. in 19344. AC suggests another report had it at Fort Benning in Georgia through 1934.
ICC **257**	w/n 39168	Sold to A. B. Shaw; Later to ?
ICC **258**	w/n 39169	Sold to Equitable Equipment Co.; Later to ?
ICC **259**	w/n 39170	Sold to A. B. Shaw; Later to ?
ICC **260**	w/n 39171	Later to US War Department
ICC **261**	w/n 39172	Later to ?
ICC **262**	w/n 39173	Sold to A. B. Shaw; Later to ? Source [13] says: 212 and 262 only left the ICC rails in 1940, when they were sold first to the Gulf Refining Company as their road numbers **4** and **6**, then almost immediately to Wier Long Leaf Lumber. In 1937, that company was featured operating a "mighty sawmill" at Wiergate, west of Texas's Sabine River and "grinding away into the 'last great stand' of virgin Long Leaf Yellow Pine timber west of the Sabine."
ICC **263**	w/n 39174	Sold to A. B. Shaw; Later to ?
ICC **264**	w/n 39175	Later to Alaska Engineering Commission no. **264**.
ICC **265**	w/n 39176	Later to Alaska Engineering Commission/Alaska Railroad no. **265**.
ICC **266**	w/n 39177	Later to Alaska Engineering Commission no. **266**. "Transferred to the ARR in 1915/16. Converted to standard gauge. Re-assembly was completed in Anchorage in April 1917. From AEC reports it appears the **266** was used mostly in work train service and occasionally in mixed train service during the ARR construction era. Retired in January 1946. (Whittier, Alaska, 1944-45)"
ICC **267**	w/n 39178	Sold to Equitable Equipment Co.; Later to Wabash, Chester & Western RR no. **267**; then to Wichita Falls, Ranger & Fort Worth RR no. **202**. Source [13] says went to Dallas, Cleburne & Southwestern as their no. 9.
ICC **268**	w/n 39179	Sold to A. B. Shaw; Later to Birmingham Rail & Locomotive no. **1567**; then to Northwestern Railroad of South Carolina, S.C. eventually as their no. **14**.
ICC **269**	w/n 39180	Later to ?
ICC **270**	w/n 39181	Later to Alaska Engineering Commission/Alaska Railroad no. **270**. Sold to Bethlehem Steel, Seattle for scrap 1947.
ICC **271**	w/n 39182	Collided with engine no. **403** between Empire and Culebra on Friday Jan. 9th 1914. Later to US War Department at Camp Benning, Georgia, by 1919.
ICC **272**	w/n 39183	Later to Alaska Engineering Commission/Alaska Railroad no. **272**, Sold to Bethlehem Steel, Seattle for scrap 1947.
ICC **273**	w/n 39184	Sold to A. B. Shaw; Later to Ouachita & Northwestern Ry as no. **2**; then to Louisiana Central Lumber. Co., Louisiana. no. **2**.
ICC **274**	w/n 39185	Later to Panama RR no. **274** Withdrawn 1934?
ICC **275**	w/n 39186	Later to Alaska Engineering Commission/Alaska Railroad no. **275**. Scrapped 1930.
ICC **276**	w/n 39187	Later to US War Department. Source [13] says then to Alaska.

ICC **277**	w/n 39188	Later to Alaska Engineering Commission/Alaska Railroad no. **277**. Scrapped 1936. Source [13] says went to Grant Timber & Manufacturing as their no. **12**, then to Good Pine Lumber.
ICC **278**	w/n 39189	Later to Alaska Engineering Commission/Alaska Railroad no. **278**. Scrapped 1936. AC also points out that this loco works no. was also reported as sold to Dardanelle & Russellville RR as no. **10**, Russellville, Arkanasas, and as later placed on display.
ICC **279**	w/n 39190	Sold to A. B. Shaw; Later to Grant Timber & Manufacturing Co. no. **12**. One source (but possibly confusing it with **278**) says it was sold through Equitable Equipment Co and became Dardanelle & Russellville **10** in 1921, before being retired in 1957.
ICC **280**	w/n 39191	Later to Alaska Engineering Commission/Alaska Railroad no. **280**. Scrapped 1930.
ICC **281**	w/n 39192	Later to ?
ICC **282**	w/n 39193	Sold to A. B. Shaw; Later to ?
ICC **283**	w/n 39194	Sold to Equitable Equipment Co.; Later to ?
ICC **284**	w/n 39195	Sold to Equitable Equipment Co.; Later to 39195 ?
ICC **285**	w/n 39196	Later to Panama RR no. **285**; then to Alaska Engineering Commission/Alaska Railroad no. **285**. Scrapped 1947 by Bethlehem Steel of Seattle..
ICC **286**	w/n 39197	Later to PRR no. **286**. Then to US War Department – Panama Canal Zone no. **286**., named **'GENERAL J. J. MORROW'**. Used on isolated line west of Gatún locks called Mindi Dyke. Still there 1934. Scrapped.
ICC **287**	w/n 39198	Later to ?
ICC **288**	w/n 39199	Sold to A. B. Shaw; Later to ?
ICC **289**	w/n 39200	Sold to A. B. Shaw; Later to ?
ICC **290**	w/n 39201	Later to Panama RR no. **290.** Withdrawn 1947?
ICC **291**	w/n 39202	Later to Panama RR no. **291**, withdrawn 1934? Panama Canal Commission
ICC **292**	w/n 39203	On spoil train from Culebra when ran into rear of a similar train hauled by **253**. Brakeman killed. Later to Panama RR no. **292**. Then to US Army
ICC **293**	w/n 39204	Later to ?
ICC **294**	w/n 39205	Later to ? Source 13 says went to Edward Hines Yellow Pine.
ICC **295**	w/n 32206	Later to ?
ICC **296**	w/n 32207	Later to ?
ICC **297**	w/n 32208	Later to US War Department
ICC **298**	w/n 32209	Accident caused by loco sliding into rake of wagons, Sept. 29 1910, one laborer killed. [*Canal Record* vol. 4 p44]. Later to A. B. Shaw.
ICC **299**	w/n 32210	Later to Panama RR no. **299**; *'34 *'47 In 1955 placed on display at Balboa Heights; In 1979 removed and sent to Paterson N.J. for display. See photo below.
ICC **300**	w/n 32211	Later to ?

Additionally, AC reports that a loco no. **306** was photographed at Camp Holabird, Maryland, in 1919 but bearing an ALCo Cooke builders' plate, thus was probably actually a 201 series engine.

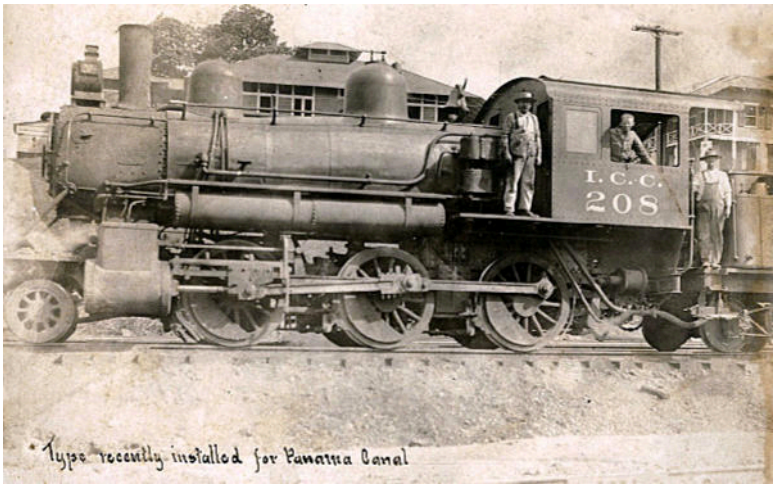


Front End Arrangement for Mogul Locomotive With 19-in. Cylinders.

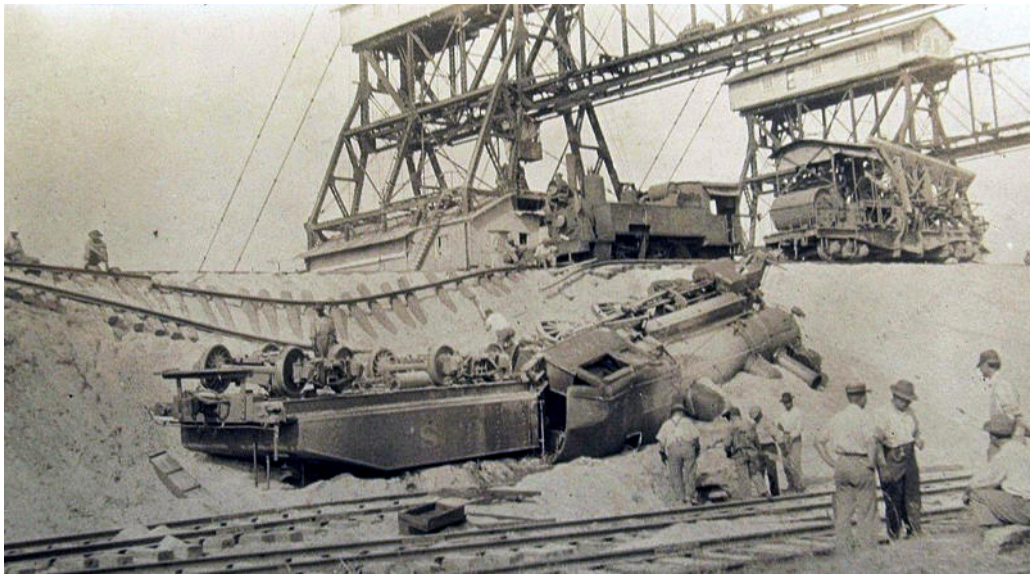
Half Section Through Firebox

Part drawings of 201 series locos, from *The Railroad Gazette*, 1906, vol. 41 p59.

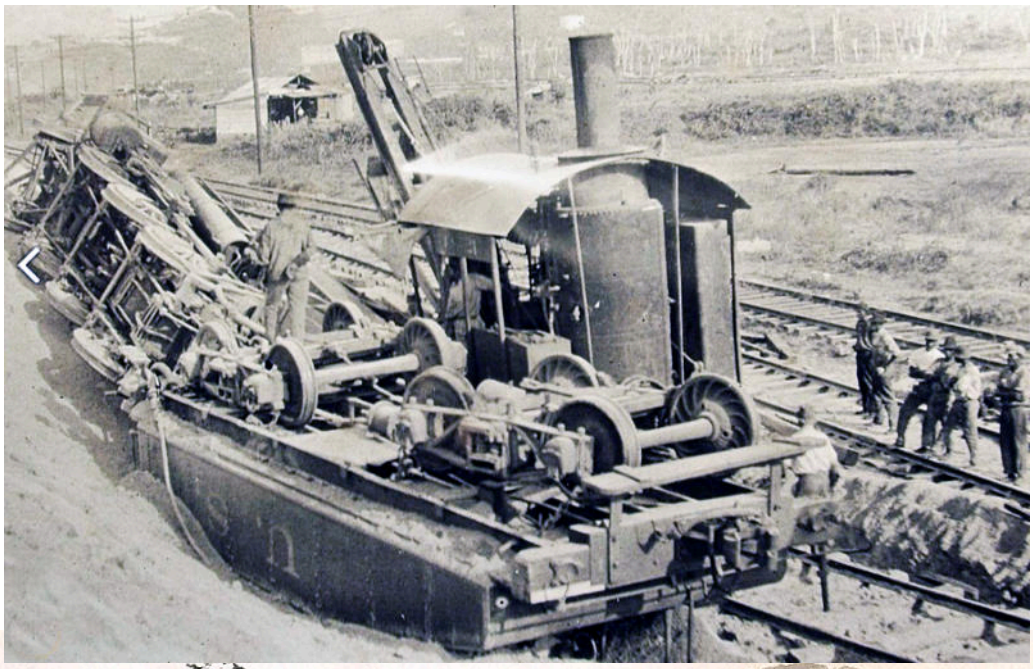
This 201 class loco is seen here more-or-less as built, but with the relatively common addition of a steam take-off pipe leading forward from the dome to enable the powering of a Lidgerwood winch on a wagon immediately in front of the engine.



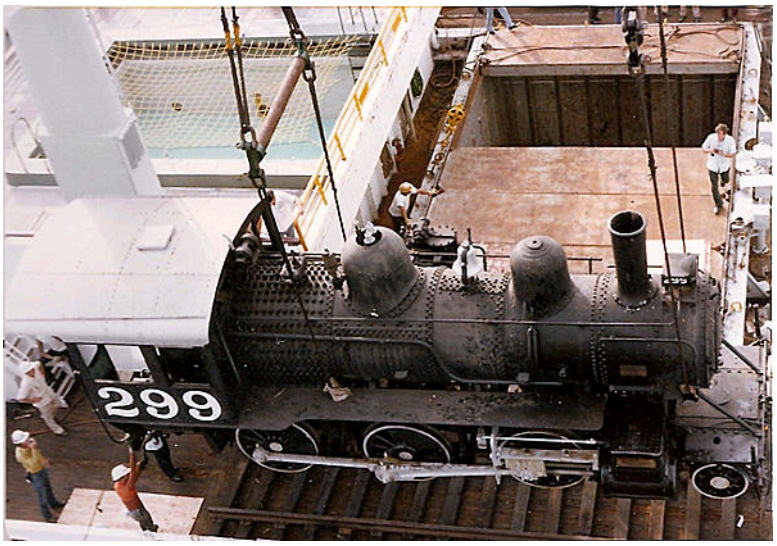
The left hand side of as 201 class loco, in this case no. **208**. Note the slightly raised running plate over the air reservoir, and the pump just ahead of the cab.



These two views, found in source [17], show the aftermath of an embankment collapse. A class 201 mogul has rolled over, whilst an FB type 27 0-6-0T and a spoil plough stand on the embankment above. In the slightly later photo below, a small steam crane has turned up, but is unlikely to be able to do much on its own.



The aftermath of a spectacular derailment. A mogul of either the 201 or 301 classes has slid down an embankment side into the water. Four wrecking cranes are being employed to rescue it, two lifting the tender and two more the loco itself. It must be guessed that any rolling stock had already been recovered as that would have been easier. Note the water cascading from the tender tank. Source [17] the *Canal Zone Photos* website.



Class 201 mogul no. **299** had been plinthed since 1955 at Balboa Heights within the canal zone, but with the Americans about to pull out in 1979, it was rescued (supposedly surruptitiously and at night!) and loaded on board ship to be returned to Paterson, NJ, where it had been built.

This 201 series engine is now plinthed in the town of Paterson, New Jersey, where it had been built. Apparently it first bore PRR initials on its tender, but as that led to assumptions that it had been a Pennsylvania Railroad engine, it reverted to the 'US' initials that it had probably borne when it first reached tthe isthmus.

Locomotive No. 656, which was damaged in the collision of November 6 on the Panama-Bas Obisp› branch of the Panama railroad, was returned to duty from Empire shops on December 3. Locomotive No. 203, injured in the same wreck, will not be repaired, but will be stripped and scrapped. Repairs to all the other rolling stock, with the exception of the flat car which was demolished, have been completed

A paragraph from *The Canal Record* in November 1913.

No. **285** is seen here in later service with the Alaska RR. Hi-res versions of this image can be obtained from the Railroad Museum of Pennsylvania.

2-6-0 d/w 54", cyls. 19x24", built by Baldwin in 1907

Ordered for Isthmian Canal Commission.

BLW class 8-32D nos. 721-760. Spec. is in vol. 29 p 265. slope back tender, mark on tank: 'I. C. C.'.

ICC **301**	w/n 30051	Later to US War Department no. unknown ; then to Birmingham Rail & Locomotive as no. **1422** (Lehmuth gives no. as **301)**, and to Weir Long Leaf Lumber Co. for Gulf & Northern RR in 1921 as no. **23**; then to Gulf Refining Co., Texas no. **6**. Scrapped 1948.
ICC **302**	w/n 30052	Later to Panama RR no. **502**; then to US Engineers' Depot as no. 7, and on to US War Department at Mira Loma QMD depot, California, as no. **6931**; Advertised for sale via WAA in 1947. #'49 ->
ICC **303**	w/n 30053	Later to US Engineers depot as no. **7**,; then on to USATC as no. 6923 at Camp Atterbury, Indiana. For sale via WAA in 1947.
ICC **304**	w/n 30054	Later to US War Department no. unknown; then to Birmingham Rail & Locomotive no. **1674**; then to National Cement Co., Ragland, Alabama. no. **1**.
ICC **305**	w/n 30055	AC notes that **305** or **306** went to Birmingham Rail & Locomotive and was sold 11/20/1922 to M. E. Davis, New York, N.Y.
ICC **306**	w/n 30056	AC notes that **305** or **306** went to Birmingham Rail & Locomotive and was sold 11/20/1922 to M. E. Davis, New York, N.Y.
ICC **307**	w/n 30121	Later to US War Department) # ; then to Peavy-Wilson Lumber.Co., Co. no. **7**, Scrapped 1951.
ICC **308**	w/n 30122	Later to US Army no. **308** at Camp Jackson, South Carolina by 1920.
ICC **309**	w/n 30123	Later to Panama RR no. **309**, then to US Army no. **309**, Repaired at Fort Benning, Georgia, in 1923, was at Fort Belvoir, Virginia in 1944 as USATC no. **6975**; to US Penitentiary, Lorton, Virginia as no. **6975**. Retired 1948.
ICC **310**	w/n 30124	Later to ?
ICC **311**	w/n 30141	Later to Panama RR no. **311**,; then to US War Department – Panama Canal Zone , at Fort Kobbe as no. **311** in 1934. AC comments that other sources have this engine as QMC-USA no. **6237** at Fort Benning, Georgia from 1927 through 1934. Then at Osborne, Ohio, in 1942 with the boiler off ICC **334** owing to fire damage on NYC(?) Then became USATC no. 6936 at Fort Benning, then on to Brookley Field, Alabama. For sale there via WAA in 1945-46.
ICC **312**	w/n 30142	Later to?
ICC **313**	w/n 30143	Later to US Quartermaster Corps as no. 6236; repaired at Fort Benning in 1923. Then at Fort Monroe, Virginia in 1928. then sold to Transport Trading & Terminal Corp. around 1940.
ICC **314**	w/n 30144	Later to US Engineers no. **8**., at Fort Benning in 1934.
ICC **315**	w/n 30145	Sold to A. B. Shaw; Later to Carnegie Steel Co.

ICC **316**	w/n 30146	July 8 1911, Pulling wagon of coal for steam shovels in Culebra cut, track undermined by slide, loco and wagon slid 40' into cut. One dead. Later to US Engineers no. **?**.
ICC **317**	w/n 30147	Later to ?
ICC **318**	w/n 30187	Later to US War Department no. unknown, repaired at Fort Benning in 1933-34, on to Fort Bragg, North Carolina, and leased to Cape Fear Railways in 1936; then to Birmingham Rail & Locomotive as **1629**, and resold to Mt. Vernon Car Manufacturing Co., Illinois no. **6**. Scrapped 1939.
ICC **319**	w/n 30188	Later to ?
ICC **320**	w/n 30189	Later to ?
ICC **321**	w/n 30190	Later to Coast Defences of Chesapeake Bay, Va. by 1920 as no. **3**,; on to QMC-USA no. **62315** at Fort Benning in 1927; on to Fort Humphreys, Virginia in 1927, then Fort Eustis, Virginia, back to Fort Benning in 1929; later to USATC no. **6924**. and repaired at Holabird Depot, Maryland in 1943.
ICC **322**	w/n 30213	Sold to A. B. Shaw; Later to Carnegie Steel Co. no. **?**.
ICC **323**	w/n 30214	Later to US Quartermaster Corps no. **6233** at Fort Benning, Georgia, by 1927; on to Fort Bragg; then leased to Cape Fear Railway still as no. **6233**, and back to Fort Bragg by 1934.
ICC **324**	w/n 30215	Sold to Equitable Equipment Co., Later to Edward Hines Yellow Pine Trustees no. **2**.
ICC **325**	w/n 30217	Later to US War Department # ; then to Duluth & Northeastern (Minnesota?) RR no. **21**, or **20** according to source [13], scrapped 1956.
ICC **326**	w/n 30218	Later to US War Department and on to US Quartermaster Corps no. **6238** ; at Fort Benning 1927 and named there as **'The ENGINEER'**. Later at Fort Belvoir as USATC no. **6971** ; For sale there via WAA in 1947.
ICC **327**	w/n 30219	Later to US Engineers no. **5**. At Fort Benning in 1927; Repaired there in 1933 and still there in mid 1934.
ICC **328**	w/n 30220	Later to ?
ICC **329**	w/n 30259	Later to Tennessee Valley Authority no. **2**.
ICC **330**	w/n 30260	Later to US War Department # ; then to Duluth & Northeastern RR no. **20**.
ICC **331**	w/n 30261	Later to US Engineers no. **6**.
ICC **332**	w/n 30262	Later to US War Department, for US Quartermaster Corps no. **332**, later to USATC as no. **6970**., and sold to St. Regis Paper Co., New York, still as **6970** after WW2. Never relettered. Scrapped 1957.
ICC **333**	w/n 30263	Later to US War Department no. unknown; sold to Birmingham Rail & Locomotive; then to Mt. Vernon Car Manufacturing Co., Ill. by 1925 as no **5**. Scrapped 1939.
ICC **334**	w/n 30273	Later to US Quartermaster Corps no. **6237**. AC says this identity was on QMC-USA no. **6237** as Osborne, Ohio in 1942. Two locos apparently damaged in a loco shed fire at Bucyrus shops on the NYC in 1941. Suggested that this boiler then relocated on no. **6237** which became USATC no. **6936**. One other engine in fire became USATC no. 69677 but that cannot be identified. The foregoing notes don't make complete sense to me yet.
ICC **335**	w/n 30274	Later to ?
ICC **336**	w/n 30275	Later to Lawrence Stone & Gravel Co. around 1935.
ICC **337**	w/n 30276	Later to US Quartermaster Corps no. **6235**.; at Fort Benning, Georgia in 1927, to Ft. Eustis in Virginia but returned to Fort Benning by 1929; to Fort Bragg, North Carolina 1933 and leased to Cape Fear Railways still as no. **6235**.
ICC **338**	w/n 30277	Later to ?
ICC **339**	w/n 30313	Later to Birmingham Rail & Locomotive no. **1458**; then to Mt. Vernon Car

Mfg. Co. as no. **4**; Scrapped 1939.

ICC **340** w/n 30314 Sold to A. B. Shaw; Later to CarnegiecSteel Co. according to Source [13].

Allen Copeland's list also notes the following as unidentified sales and problems:

QMC-USA no. **1**, a Baldwin was at Ft. Devens, Ayer, Mass. c19l8-l9.

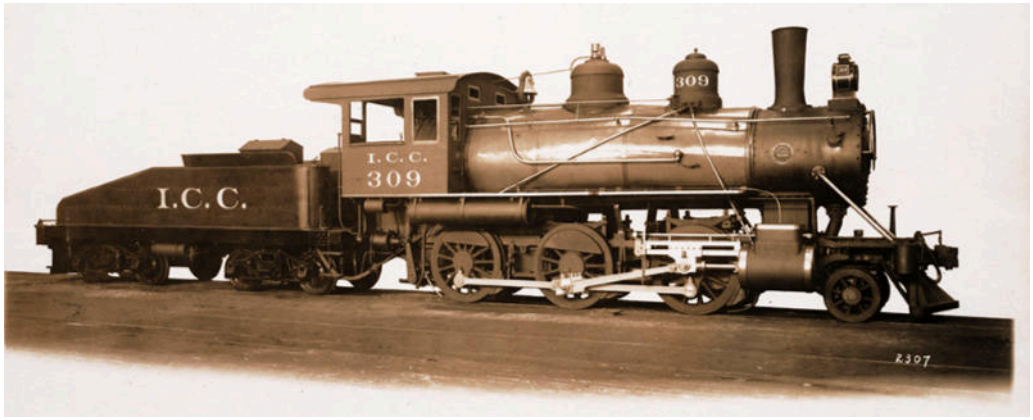
QMC-USA no. **6232**, a Baldwin was at Ft. Monroe, and sent to Ft. Benning in 1929. Also carried local /12.

QMC-USA no. **62310**, a Baldwin repaired at Ft. Benning, Ga. 9/23.

QMC-USA no. **62311**, a Baldwin seen at Ft. Hancock, N.J. 7/25/36.

QMC-USA no. **62312**, a Baldwin repaired at Ft. Benning, Ga. 9/23. Still there 6/30/24.

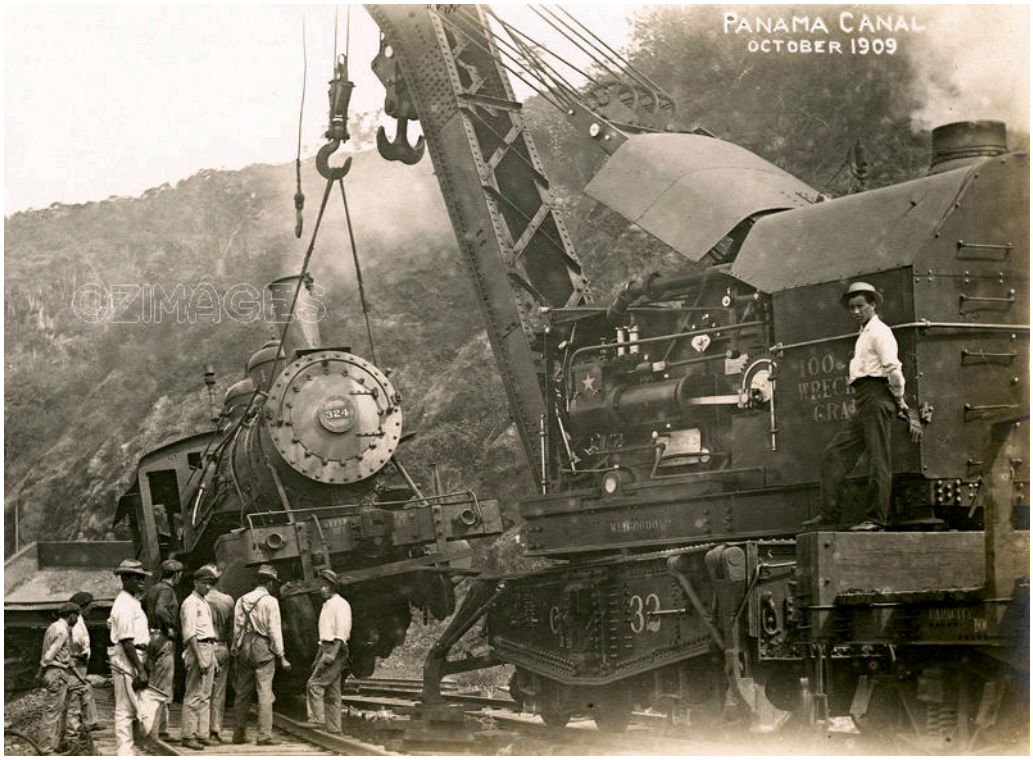
USATC no. **6927**, a Baldwin repaired at Bucyrus, Ohio, shops of NYC, 1941.



Loco no. **321** in store, apparently at Dump 6 wherever that was. The fixed pipe leading forward from the dome suggests that this engine had spent time as a stationary boiler somewhere, or it may have been the supply pipe to the steam plough winch necessary for the operation of Lidgerwood flat cars.

No. **311** goes paddling! This view clearly shows the tender top layout, though with the rear-facing headlamp removed.

This June 1912 view south of Miraflores shows no. **323** from an identical angle. In this case the rear lamp, handrail, and switcher's footsteps are still in place.



Mogul no. **324** is seen being lifted by wrecking crane no. **32**, apparently the only 100 ton crane in the fleet, the other large ones being 75 ton machines.

0-4-2ST d/w ?, cyls. ?, built by Porter in 1883 and 1885

Previously part of the Panama RR fleet. Previous PRR/*CUCI* numbers uncertain. Copeland says that some of these lost their trailing trucks in later years.

ICC **401**	w/n 696	
ICC **402**	w/n 697	
ICC **403**	w/n 701	Collided with engine no. **271** between Empire and Culebra on Friday Jan. 9th 1914.
ICC **404**	w/n 702	
ICC **405**	w/n 708	
ICC **406**	w/n 709	

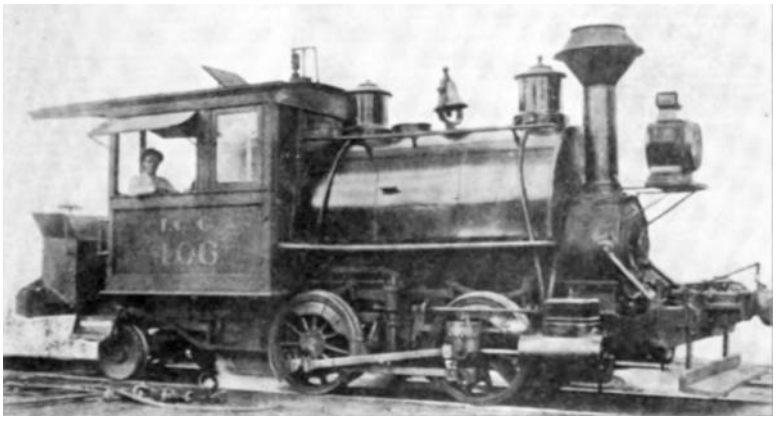
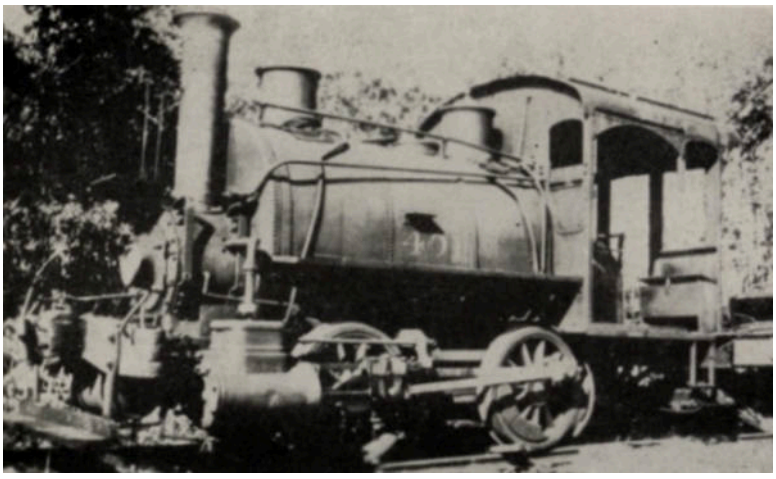
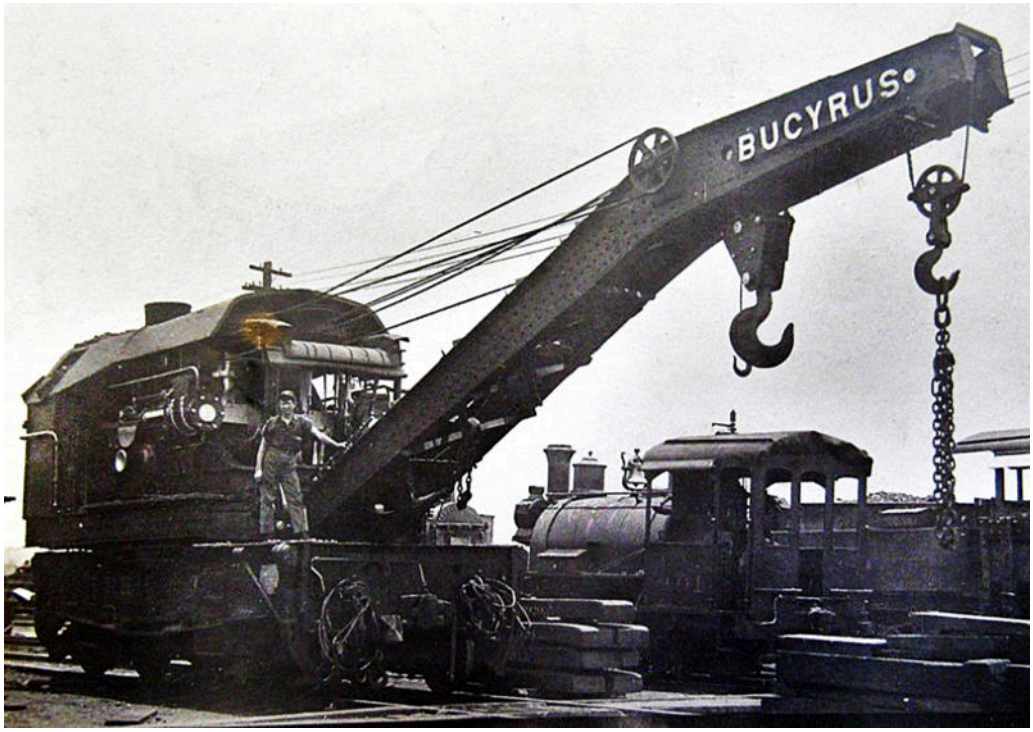


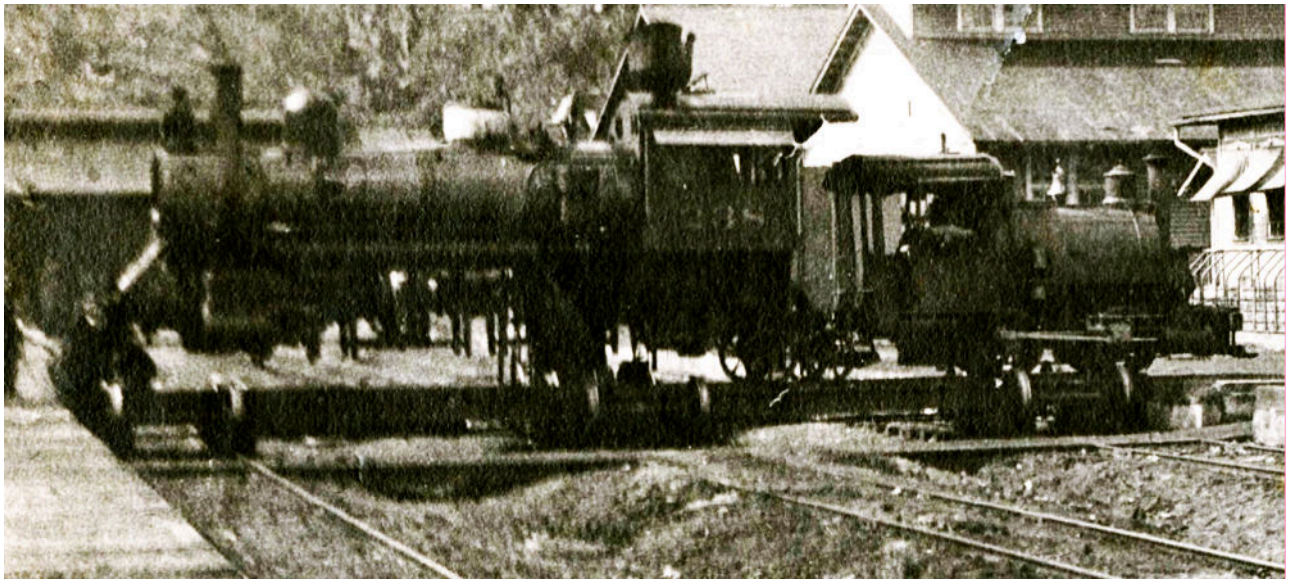
Photo of ICC no. **406** from *Railway and Locomotive Engineering* of March 1909, p 105.



In this photo no. **401** would appear to be lying derelict, with an incomplete cab of a different style to that seen above, and with parts such as the bell missing. It does indeed appear that the trailing truck is missing, as is the bunker.



Porter **401**, seen here framed by a big Bucyrus steam wrecking crane, appears to have the shorter cab that was seen in incomplete form in the previous picture. It rather looks as though such cabs were fitted as standard to those engines which had lost their trailing trucks.



One of the Porter 0-4-2STs as rebuilt to 0-4-0ST configuaration, being used as 'yard goat' at one of the ICC workshops, and in this case transferring the wheelless carcase of 2-6-0 no. **238** using the workshop traverser.

0-6-0ST d/w 42", cyls. 15x22", built by Hinkley in 1882 and 1883

Previously part of the Panama RR fleet. Hinkley 1584-6 and 1568 and two more unidentified.
Four of them went to the US Administration: as PRR nos. **6, 7**, and as ICC **451, 452**.

ICC **451** w/n ?
ICC **452** w/n ?

0-6-0T d/w 15x22", cyls. 44", built by Rogers in 1883

Ordered for Panama Canal Co. Previously part of the Panama RR fleet. These had been *CUCI* PRR nos. **19-40**, Rogers 3359-3360, 3370-3371, 3378-3381, 3387-3390, 3396-3399, 3402-3403, 3406-3409. Seventeen of them went to the US Administration: fourteen to the PRR as nos. **8-20**, and three to the ICC as nos. **453, 458**, and **497**. However, see the photo which follows which might be loco no. **465**.

ICC **453** w/n ?
ICC **458** w/n ?
ICC **465**? w/n ?
ICC **497** w/n ?

A photo from source [15] shows Rogers 0-6-0ST no. **458** after a smash.
Note the added air-pump and reservoir.

This Rogers 0-6-0ST is clearly working during the US administration period.
It bears the identity ICC **165** on its cabside, which does not fit with the
number series listed above, or perhaps it reads **465** which would be more plausible.

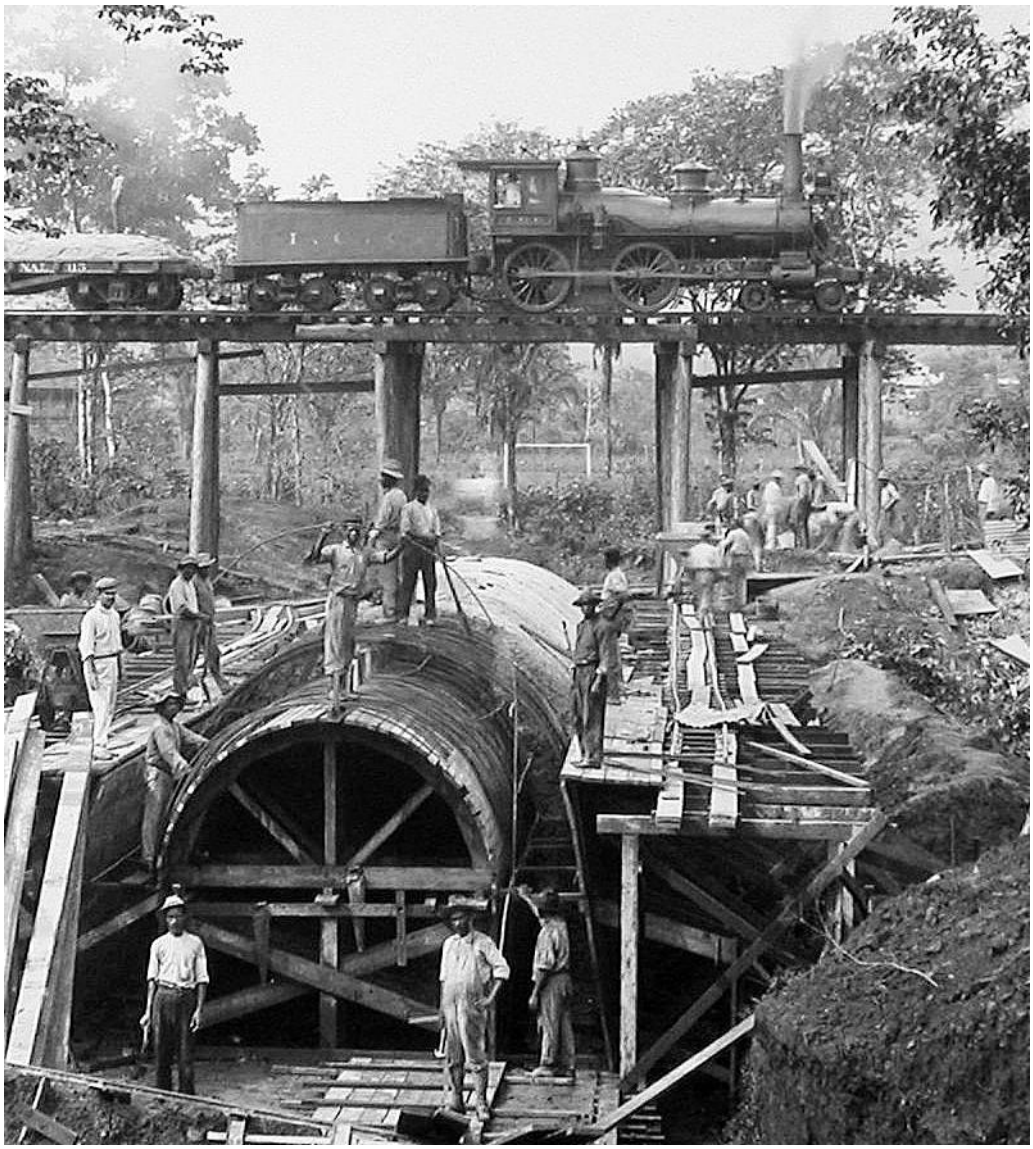
4-4-0 d/w ?, cyls. ?, built by Danforth Cooke in 1883

Ordered for Panama Canal Co. *(CUCI*). Previously part of the Panama RR fleet. These had been previously amongst nos. **41-56**, which were Cooke 1519-1534.

ICC **498** w/n ?

ICC **499** w/n ?

ICC **500** w/n ? Loco **500** on a labor train reportedly hit a cow and overturned killing the driver. Sept. 21 1910. [*Canal Record* vol. 4 p27].



Although the running number is not visible, this engine bears the letters ICC on its tender, showing that it will have been one of **498, 499** or **500**. However, Small [15] says that the original image shows the number **503** on the headlamp, suggesting that the photo was taken in 1907 before the 500 series was re-used for French 0-6-0Ts. Note the short smokebox, not as originally carried.

0-6-0T d/w 1200mm, cyls. 400x600mm, built by Franco-Belge between 1881 and 1887

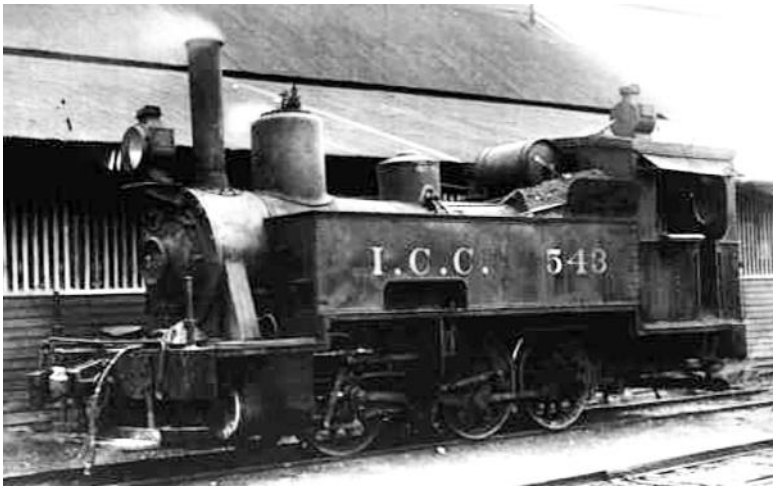
Ordered for *CUCI*. From Couillet nos. 587-592, 629-638 and 702-711, Cockerill 1436-1450 and 1517-1528, and St. Leonard 693-705 and 762-771. Copeland says that these were all known as 'Chiriquis' by the Americans, and had been regauged to 1524mm. They were probably all of the larger type of 0-6-0T, Franco-Belge class 27.

ICC **501** w/n ?

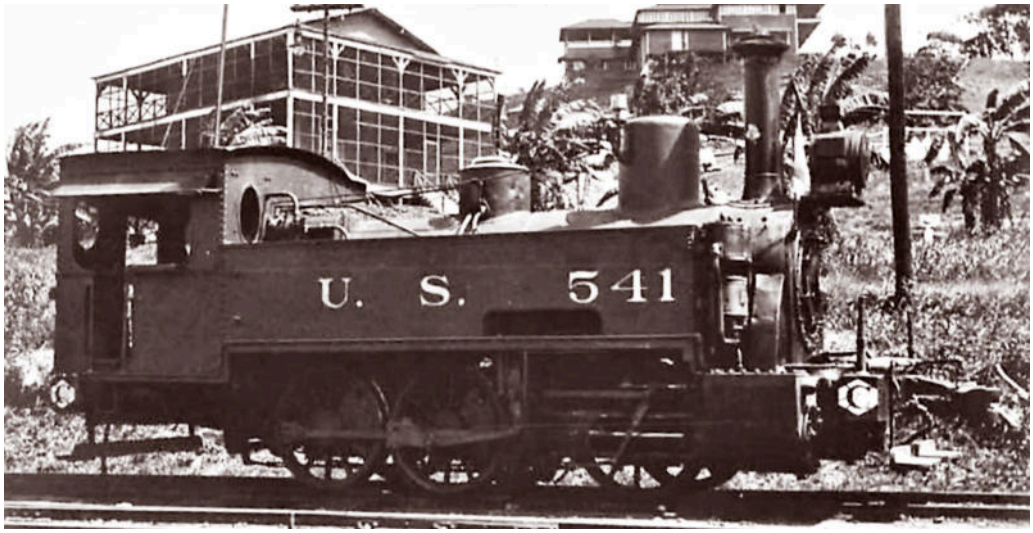
ICC **502** w/n ? Definitely Franco-Belge type 27.

ICC **503** w/n ?

ICC **504**	w/n ?	
ICC **505**	w/n ?	
ICC **506**	w/n ?	
ICC **507**	w/n ?	
ICC **508**	w/n ?	
ICC **509**	w/n ?	
ICC **510**	w/n ?	A very poor photo in Saunders [1] seems to show this engine with a cut-out beneath the tank and thus probably a Franco-Belge type 27.
ICC **511**	w/n ?	
ICC **512**	w/n ?	
ICC **513**	w/n ?	
ICC **514**	w/n ?	
ICC **515**	w/n ?	
ICC **516**	w/n ?	
ICC **517**	w/n ?	
ICC **518**	w/n ?	
ICC **519**	w/n ?	
ICC **520**	w/n ?	
ICC **521**	w/n ?	Definitely Franco-Belge type 27. This was one of the pair that fell off a trestle at Miraflores, see [18] p32.
ICC **522**	w/n ?	Definitely Franco-Belge type 27.
ICC **523**	w/n ?	
ICC **524**	w/n ?	Definitely Franco-Belge type 27.
ICC **525**	w/n ?	
ICC **526**	w/n ?	
ICC **527**	w/n ?	
ICC **528**	w/n ?	
ICC **529**	w/n ?	
ICC **530**	w/n ?	
ICC **531**	w/n ?	
ICC **532**	w/n ?	
ICC **533**	w/n ?	
ICC **534**	w/n ?	
ICC **535**	w/n ?	
ICC **536**	w/n ?	
ICC **537**	w/n ?	
ICC **538**	w/n ?	
ICC **539**	w/n ?	
ICC **540**	w/n ?	Rebuilt as Gorgona shop switcher, with saddle tank; see photo below. Frames and running gear would appear to be from an FB type 27.
ICC **541**	w/n ?	Definitely Franco-Belge type 27.
ICC **542**	w/n ?	
ICC **543**	w/n ?	Definitely Franco-Belge type 27.



ICC **543** as shown here appears to be in more-or-less original condition, but with knuckle couplers, and an air pump and reservoir.



No. **541** showing its new air pump and knuckle coupler. Photo found in Trainiac's Flickr pages at https://www.flickr.com/people/29903115@N06/

In contrast no. **540** appears to have been reconstructed with a saddle tank, possibly as the works shunter for the shops at Gorgona. The perforated balance weights suggested that this engine began life at a Franco-Belge works, and the wider spacing between the first and second axles imply that it was built to type 27.

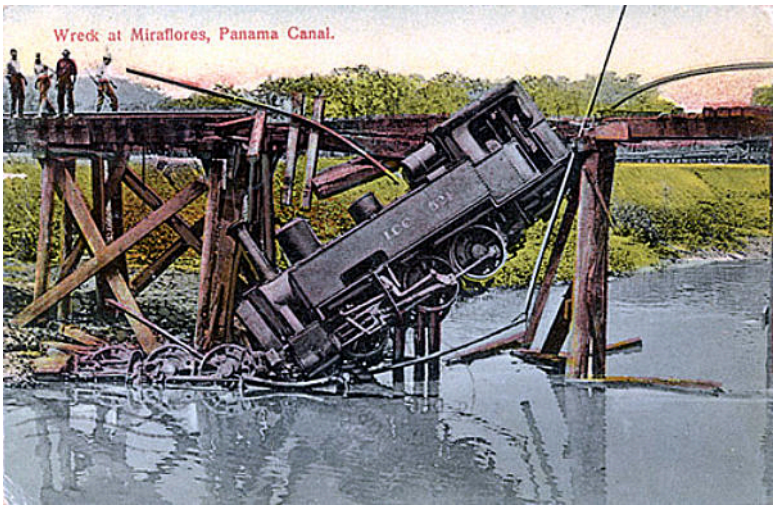
Franco-Belge type 27 no. ICC **502** with a rake of Western dump cars and a steam pile driver in the foreground.

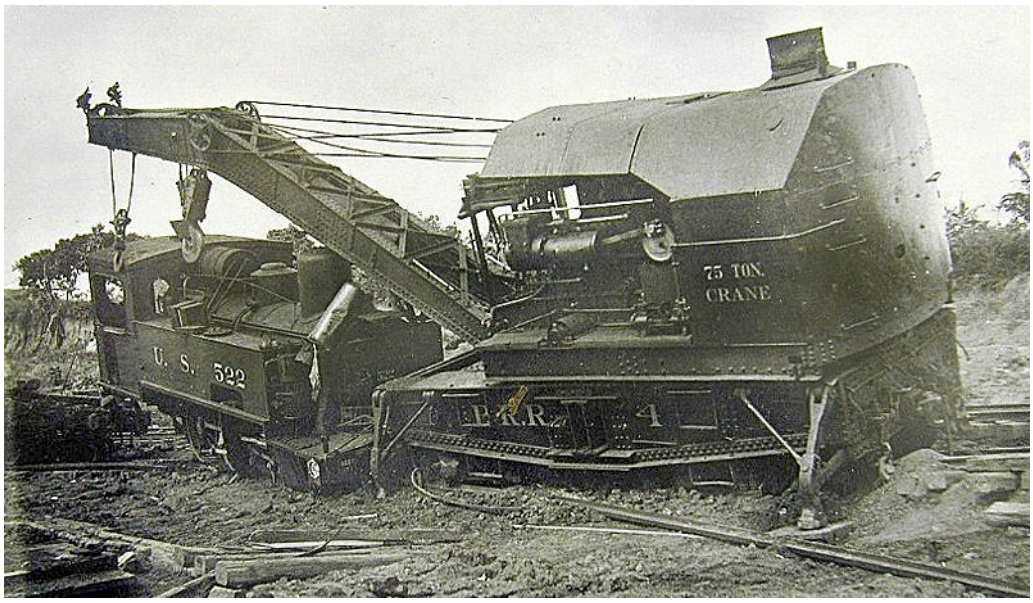
Fatal Wreck at Miraflores.

Two French engines on the work at Miraflores, coupled together, fell off the east trestle crossing the Cocoli river on September 3. Rejelio Castillo, Juan Sanchez, and Coementi Gonzales were killed. Rivio Arios was severely injured and died before he reached the hospital.

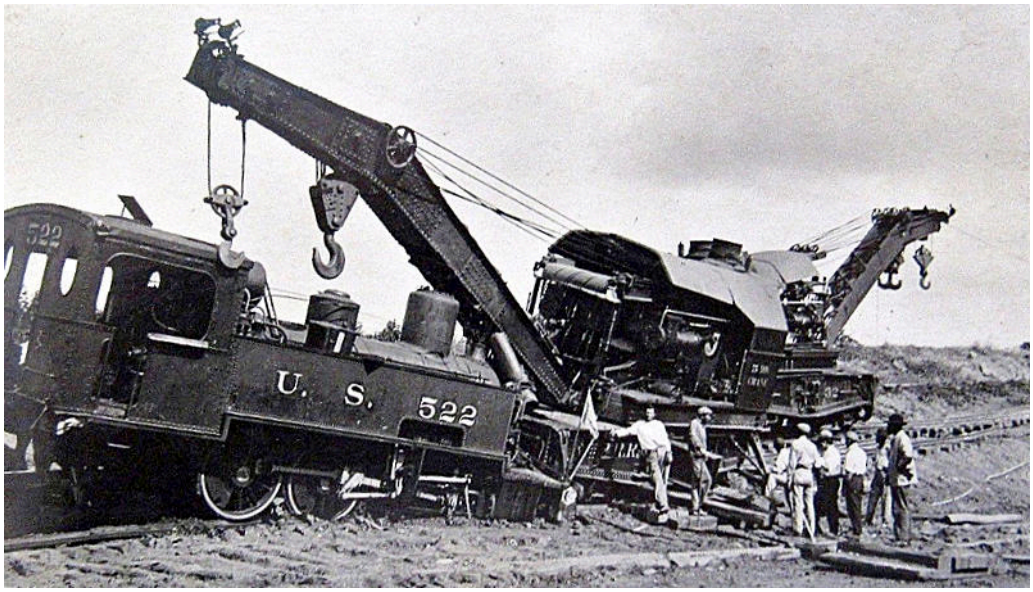
The accident occurred at 11.06 o'clock in the morning when the men were going to meet the labor train at the lunch hour. As the track approaching the trestle is laid on a new fill, it is apparent from the evidence thus far gathered that the head engine upon approaching the rigid trestle structure, was derailed with a heavy drift to the left. Upon leaving the deck this engine struck one of the bents, knocking it down and pulling the other engine through the breach thus produced. The trestle withstood the wreck with comparatively slight injury.

A report from the *Canal Record* of an accident on September 3rd 1908 at Miraflores when two French engines fell off a trestle. The tinted postcard photo below from source [17] would appear to show the consequences of this event. One of the locos lies upside-down in the water. The more visible one above it was numbered **521** in another version of the postcard.





A two stage derailment, involving first Franco-Belge 0-6-0T no. **522**, and then the 75 ton wrecking crane that had been brought along to rescue the loco. The second photo, below, shows a second wrecker in the background, presumably brought in to sort out the mess. Both pics from source [17].



2-6-0 d/w 63", cyls. 20x26", built by ALCo Brooks in 1906

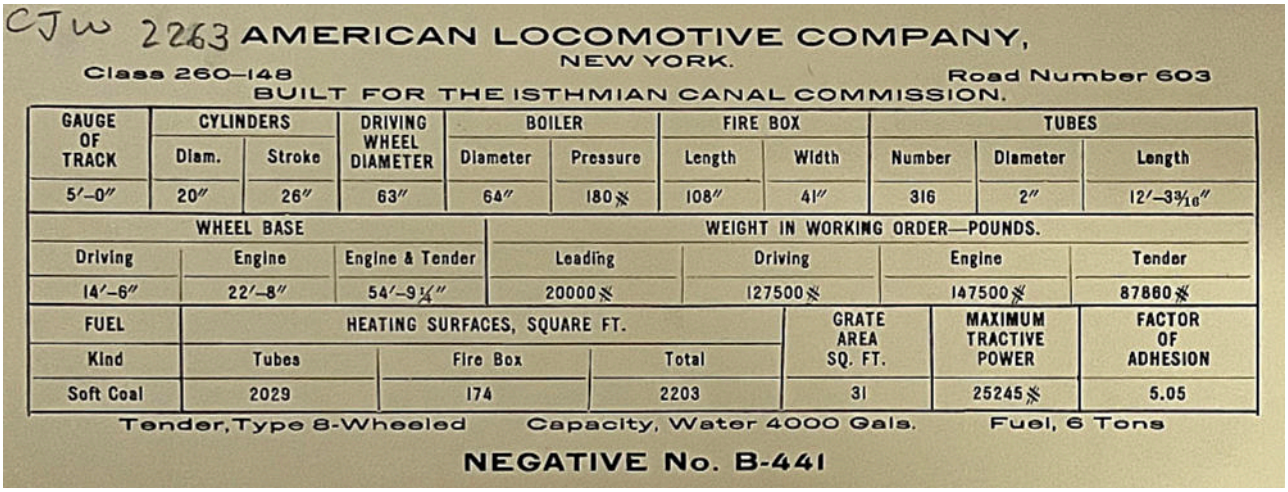
Ordered for Isthmian Canal Commission.

ICC **601**	w/n 39122	Later to Alaska Engineering Commission/Alaska RR no. **601**.
ICC **602**	w/n 39123	Sold to A. B. Shaw, and then moved on to Grand Trunk Western no. **1100** then renumbered **890**, then Detroit, Cairo & Sandusky Railway no. **1**.
ICC **603**	w/n 39124	Sold to A. B. Shaw, and then moved on to Grand Trunk Western no. **1101** then renumbered **891**, then Detroit, Cairo & Sandusky Railway no. **2**.
ICC **604**	w/n 39125	Loco **604** drawing train of Lidgerwood flats, ran into back of train drawn by **206** on Aug. 28th 1908 near Gorgona. Loco **604** derailed and overturned. Crew unhurt. Sold to A. B. Shaw, and then moved on to Grand Trunk Western as no. **1102** then renumbered **892**, then Detroit, Cairo & Sandusky Railway no. **7**.
ICC **605**	w/n 39126	Later to Alaska Engineering Commission/Alaska RR no. **605**.
ICC **606**	w/n 39127	Later to Alaska Engineering Commission/Alaska RR no. **606**. Scrapped 1947 by Bethlehem Steel of Seattle. AC says another source had this engine passed on via Birmingham Rail & Locomotive to Fort Story army base as no. **10**, then sold 1924 to Jasper County Lbr. Co. of Jasper, Texas, as their no. **2**.
ICC **607**	w/n 39128	Sold to A. B. Shaw, and then moved on to Grand Trunk Western no. **1103** then renumbered **893**, then Detroit, Cairo & Sandusky Railway no. **9**.
ICC **608**	w/n 39129	Sold to A. B. Shaw, and then moved on to Grand Trunk Western no. **1104** then renumbered **894,** scrapped 1934.
ICC **609**	w/n 39130	Sold to A. B. Shaw, and then moved on to Grand Trunk Western no. **1105** then renumbered **895,** scrapped 1934.
ICC **610**	w/n 39131	Later to Alaska Engineering Commission/Alaska RR no. **610**.
ICC **611**	w/n 39132	Sold to A. B. Shaw, and then moved on to Grand Trunk Western no. **1106** then renumbered **896,** scrapped 1934.
ICC **612**	w/n 39133	Sold to A. B. Shaw, and then moved on to Grand Trunk Western no. **1107** then renumbered **897,** scrapped 1934.
ICC **613**	w/n 39134	Sold to A. B. Shaw, and then moved on to Grand Trunk Western no. **1108** then renumbered **898,** scrapped 1934.
ICC **614**	w/n 39135	Ran over and killed worker on Dec. 17 1910 when pulling train of empty dump cars near Gorgona shops. Later to Alaska Engineering Commission/ Alaska RR no. **614**. '32 Unf/Acc Scrapped by Bethlehem Steel of Seattle in 1947.
ICC **615**	w/n 39136	Sold to A. B. Shaw, and then moved on to Grand Trunk Western no. **1109**

		then renumbered **899,** scrapped 1934.
ICC **616**	w/n 39137	Sold to A. B. Shaw, and then moved on to Grand Trunk Western no. **1110** then renumbered **900,** scrapped 1934.
ICC **617**	w/n 39138	Sold to A. B. Shaw, and then moved on to ?
ICC **618**	w/n 39139	Later to Alaska Engineering Commission/Alaska RR no. **618**.
ICC **619**	w/n 39140	Sold to A. B. Shaw, and then moved on to Grand Trunk Western no. **1111** then renumbered **901,** scrapped 1934.
ICC **620**	w/n 39141	Later to Alaska Engineering Commission/Alaska RR no. **620**. Wrecked 1938.

Allen Copeland also has the following additional comments:
In 1913, ten of the 301 class locos were turned over to the Panama RR.
In 1913, ICC 209 and 285 were turned over to the Panama RR.
A report of 7/25/17 says A. B. Shaw sent 38 of the 30l class locos to New York.
A report of 7/25/17 shows the following:
10 of these to Alaska; 2 to the Chile Exploration Co. and 95 to A. B. Shaw of Chicago.
Of those 95, 18 went to Chile and 77 to New York. This includes 22 of the 201 class; 38 of the 301 class and 13 of the 60l class.
In Jan., 1922, the Alaska Engineering Commission bought 17 of the 20l class and seven of the 601 class. A. B. Shaw bought 4 Schen., War Dept. nine of the 201 class and Equitable Equipment Co. of Pennsylvania, 15 of the 20l class.
A report of 1922 says the QMC-USA purchased from the Panama RR **301-314, 316-319, 321, 323-339**. These are probably some of the locos sent to New York by Shaw.
[13] says: All were rebuilt to roll on standard gauge track in 1917. Twelve of the 20 went in that year to the Grand Trunk Western as ther E14 class; these were **602-604, 607-609, 611-613, 615-616**, and **619**. They traded the sloped-back tenders of the ICC years for conventional tenders that carried 4,500 US gallons of water and 12 short tons of coal. The GTW gave them road numbers **1100-1111**, later renumbering them to **890-901**. The GTW sold **890-893** in 1934 to the Detroit, Caro & Sandusky as their **1-2, 7**, and **9**.
In 1922, the AlaskaRailroad bought seven of the eight remaining locomotives: **601, 605-606, 610, 614, 618**, and **620**.

ICC no. **603** ALCo publicity card photo.


CJW 2263 AMERICAN LOCOMOTIVE COMPANY,
NEW YORK.
Class 260–148 Road Number 603
BUILT FOR THE ISTHMIAN CANAL COMMISSION.

GAUGE OF TRACK	CYLINDERS		DRIVING WHEEL DIAMETER	BOILER		FIRE BOX		TUBES		
	Diam.	Stroke		Diameter	Pressure	Length	Width	Number	Diameter	Length
5′–0″	20″	26″	63″	64″	180 ℔	108″	41″	316	2″	12′–3 3/16″

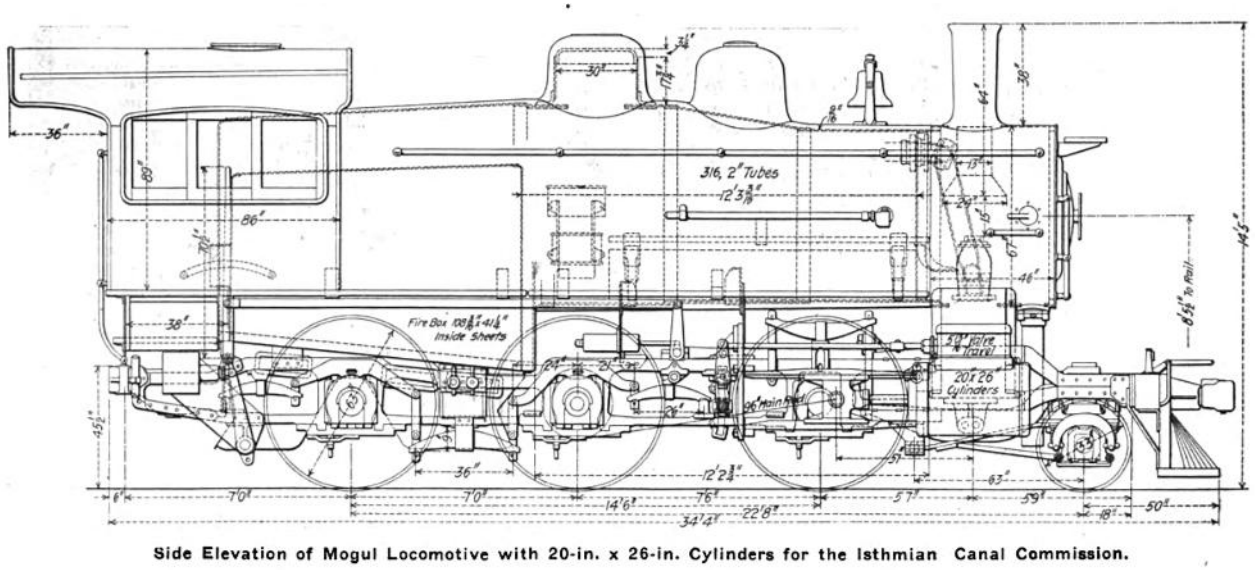
WHEEL BASE			WEIGHT IN WORKING ORDER—POUNDS.			
Driving	Engine	Engine & Tender	Leading	Driving	Engine	Tender
14′–6″	22′–8″	54′–9 1/4″	20000 ℔	127500 ℔	147500 ℔	87860 ℔

FUEL	HEATING SURFACES, SQUARE FT.			GRATE AREA SQ. FT.	MAXIMUM TRACTIVE POWER	FACTOR OF ADHESION
Kind	Tubes	Fire Box	Total			
Soft Coal	2029	174	2203	31	25245 ℔	5.05

Tender, Type 8-Wheeled Capacity, Water 4000 Gals. Fuel, 6 Tons
NEGATIVE No. B-441

ICC no. **603** ALCo publicity card details.

601 class locos in storage, with a rebuilt 101 class engine just about visible in the background on the right.



A side elevation of 601 series locos, from *The Railroad Gazette*, 1906, vol. 41 p58.

Wreck at Gorgona.

Engine 604, drawing a loaded train of Lidgerwood flats, ran into the rear of a train drawn by engine 206 at Gorgona at 4.20 o'clock on the afternoon of August 28. Engine 604 was thrown off the track and overturned and two cars were derailed. The engineer and fireman crawled out of the overturned locomotive unhurt, and no one was seriously injured in the wreck. One thousand five hundred dollars will cover the damage done to locomotive and cars. Although the loss is slight and the injuries almost negligible, this wreck is noteworthy because it is the first time in seven months that an engine of the Central Division has been overturned, on the main line, although dirt trains are run within sight of one another eight hours a day.

Report of Railroad Wreck of November 6.

The coroner's jury empaneled to inquire into the circumstances and causes of the collision between train No. 51 of the Panama railroad, and a work train of the Isthmian Canal Commission, between Paraiso Junction and Summit Cabin, at about 11.21 p. m., on November 6, has submitted the following report:

VERDICT OF THE JURY.

We, the undersigned coroner's jury, duly empaneled, having viewed the bodies and heard the statements of witnesses, find, as follows:

That the deaths of John M. Wilkins, Jr., white American, Orren Logan, white American, William Webster, black Jamaican, William Hollins, black Barbadian, Stephen Hunt, black Barbadian, and Alonzo Yearwood, black Barbadian, which occurred about 11.21 p. m., November 6, 1913, resulted from injuries received in the wreck caused by Panama railroad passenger train No. 51, engine No. 656, colliding with work train, I. C. C. engine No. 203, at the hour and date stated. The collision and wreck occurred on the Panama railroad main line track about 100 yards north of "Pacific spur," Cartagenita, between Paraiso Junction and Summit Cabin. A careful consideration of all the evidence submitted causes the jury to believe that the responsibility for the accident rested with the crew of train Engine No. 203, entering upon the track, time, and right-of-way of passenger train No. 51, engine No. 656, and that this action on the part of train crew of engine No. 203, occurred, because they for the moment overlooked the presence of train No. 51, and its position and movements on the road.

(Signed) FREDERICK QUIMBY, GEORGE W GREEN, J. W. TANNEHILL, *Jurors.*

Dated at Ancon, Canal Zone, this 14th day of November, 1913.

(Signed) ARTHUR W. KENNEDY, Lieutenant No. 3, Zone Police, *Deputy Coroner.* C. W. BARBER, *Coroner.*

Accompanying the report, the coroner's jury appended the following recommendations:

In summing up the evidence submitted, we, the coroner's jury are of the opinion that if the block system was maintained for the full 24-hour day, and the responsibility of all trains entering or leaving blocks was placed in the hands of the despatcher or operators, we feel that accidents of this nature can be avoided. Also, the question of long daily service of train crews should be taken into consideration and that no crews should be allowed to work longer at one time than the regular established hours of service, except in cases of emergency.

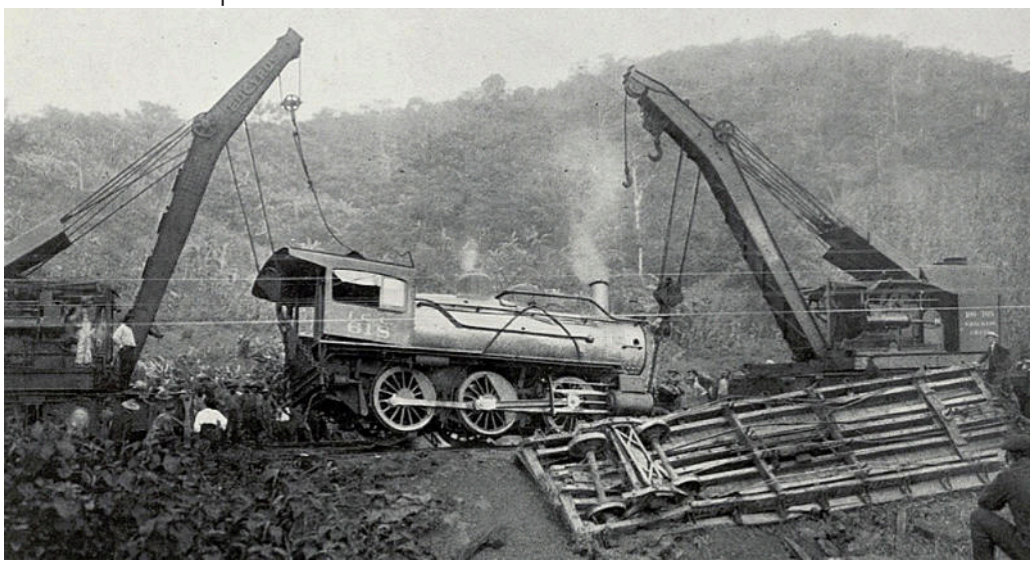
(Signed) FREDERICK QUIMBY, GEORGE W. GREEN, J. W. TANNEHILL, *Jurors.*

Upon the recommendation of the acting superintendent of the Panama railroad, the installation of an automatic signal system between Paraiso Junction and Summit Cabin has been authorized, at an estimated cost of $12,000. The superintendent of signal apparatus and telegraph and telephone service for the railroad has begun a survey in carrying out this provision.

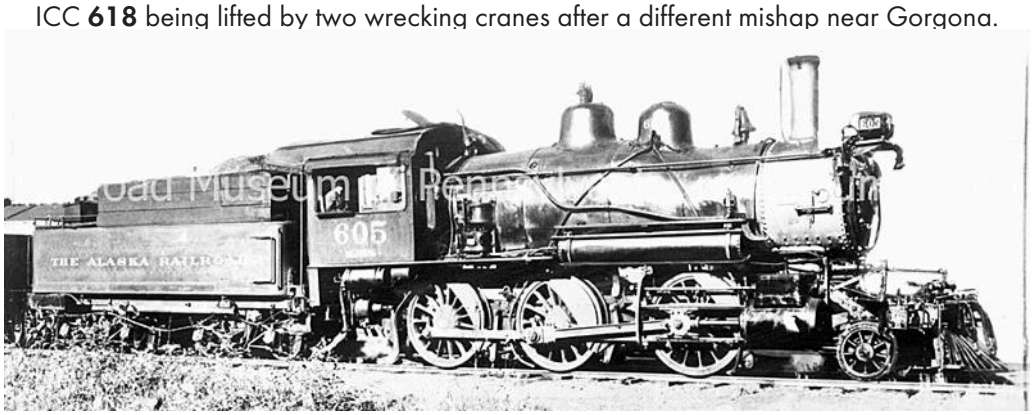
Damage to Rolling Stock in Wreck.

Locomotives Nos. 656 and 203, damaged in the wreck of November 6, are undergoing repairs at Empire shops. Damage to No. 656 was principally in the tender, which was practically demolished, the oil-burning mechanism, the rear drivers and rear portion of frame broken; to No. 203, in the trucks of the tender, the cab and all cab fixtures, and the reversing mechanism. Following is the estimated cost of repairs and replacement of all the rolling stock damaged in the wreck: Locomotive No. 656, $1,800; locomotive No. 203, $1,250; first-class passenger coach No. 114, $250; second-class passenger coach No. 210, $30; 50-ton steel flat No. 466, $700; total, $4,030.

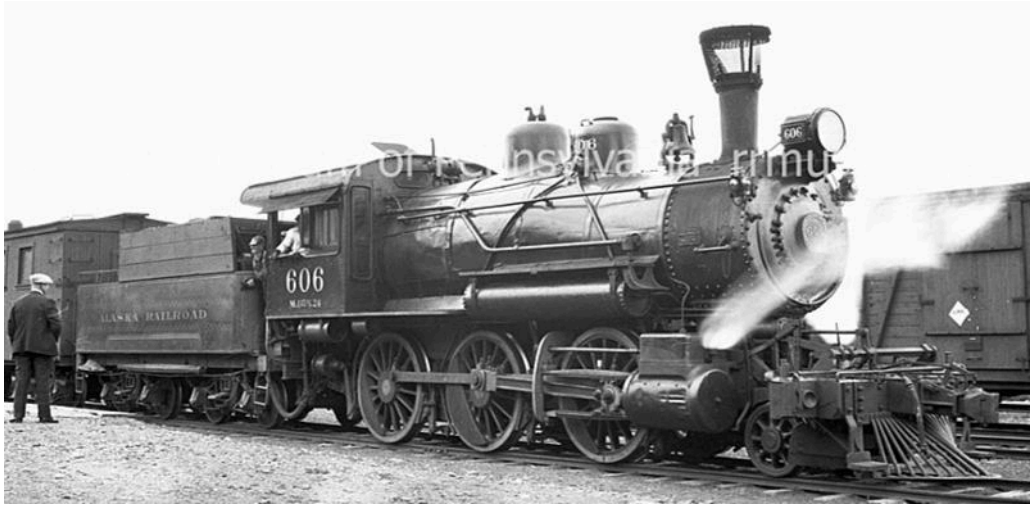
Accident report after collision between locomotives **656** and **203** in 1913.



ICC **618** being lifted by two wrecking cranes after a different mishap near Gorgona.



Ex ICC locos **605** (above) and **606** (below), are seen later in the service of the Alaska RR. Whilst it is clear that the tenders have been modified to create a larger bunker, there are also minor differences between the two engines: that seen above has its air pump on the right hand side, whilst no. **606** below has a simple spark arrestor on the chimney. Hi-res versions of these images can be obtained from the Railroad Museum of Pennsylvania.



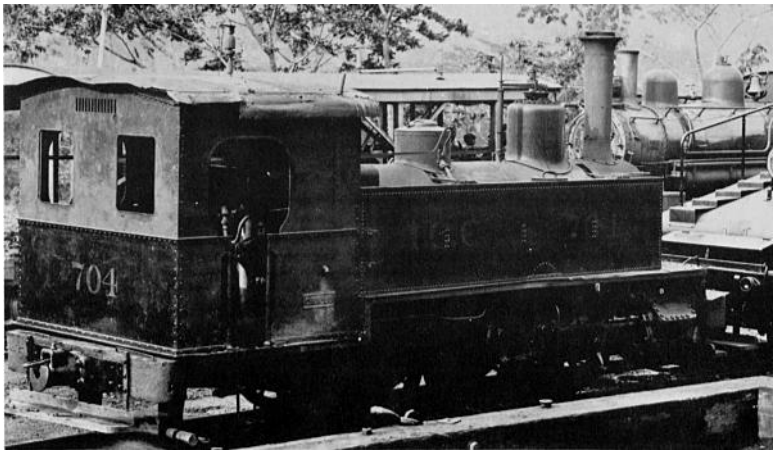
0-6-0T d/w 1200mm (approx. 47¼", cyls. 390x495mm (approx. 15½x19½") built by Franco-Belge and probably Couillet, Cockerill and St. Leonard in the 1880s

Ordered for the *CUCI*. From *CUCI* numbers **1-10, 11-16, 23-32, 43-52, 91-120, 121-145, 146-166, 177-201** which were Franco-Belge numbers 373-382 of 1881, 407-412 and 447-456 of 1882, 466-475 of 1883, 528-557 of 1885, 8565-589, and 616-636 of 1886, and 637-661 of 1887. Copeland says that these were all known as 'Belgians' by the

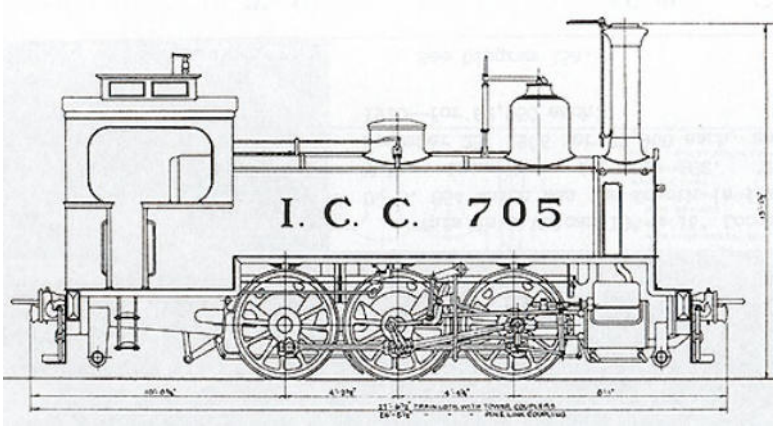
Americans, and had been regauged to 1524mm.

ICC **701**[1]	w/n ?	
ICC **702**[1]	w/n ?	
ICC **703**[1]	w/n ?	
ICC **704**[1]	w/n ?	Ex **CP 95**.
ICC **705**[1]	w/n ?	
ICC **706**	w/n ?	
ICC **707**	w/n ?	
ICC **708**	w/n ?	
ICC **709**	w/n ?	
ICC **710**	w/n ?	
ICC **711**	w/n ?	
ICC **712**	w/n ?	
ICC **713**	w/n ?	
ICC **714**	w/n ?	
ICC **715**	w/n ?	
ICC **716**	w/n ?	
ICC **717**	w/n ?	
ICC **718**	w/n ?	
ICC **719**	w/n ?	
ICC **720**	w/n ?	
ICC **721**	w/n ?	
ICC **722**	w/n ?	
ICC **723**	w/n ?	
ICC **724**	w/n ?	
ICC **725**	w/n ?	
ICC **726**	w/n ?	
ICC **727**	w/n ?	
ICC **728**	w/n ?	
ICC **729**	w/n ?	
ICC **730**	w/n ?	
ICC **731**	w/n ?	
ICC **732**	w/n ?	
ICC **733**	w/n ?	
ICC **734**	w/n ?	
ICC **735**	w/n ?	
ICC **736**	w/n ?	
ICC **737**	w/n ?	
ICC **738**	w/n ?	
ICC **739**	w/n ?	
ICC **740**	w/n ?	
ICC **741**	w/n ?	
ICC **742**	w/n ?	
ICC **743**	w/n ?	
ICC **744**	w/n ?	
ICC **745**	w/n ?	
ICC **746**	w/n ?	
ICC **747**	w/n ?	
ICC **748**	w/n ?	
ICC **749**	w/n ?	
ICC **750**	w/n ?	

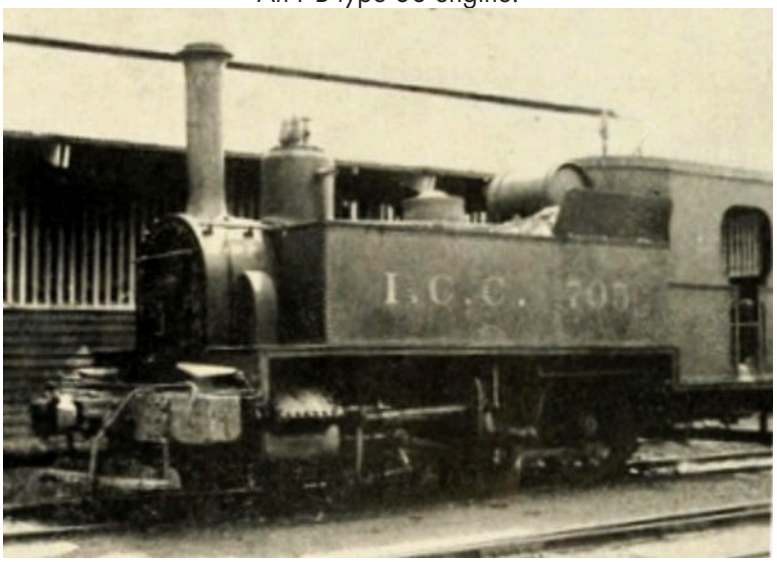
ICC **751** w/n ?
ICC **752** w/n ?
ICC **753** w/n ?
ICC **754** w/n ?
ICC **755** w/n ?



ICC **704**, still carrying a **CP 95** plate from its earlier career. Note the small cab opening. Photo from source [15].

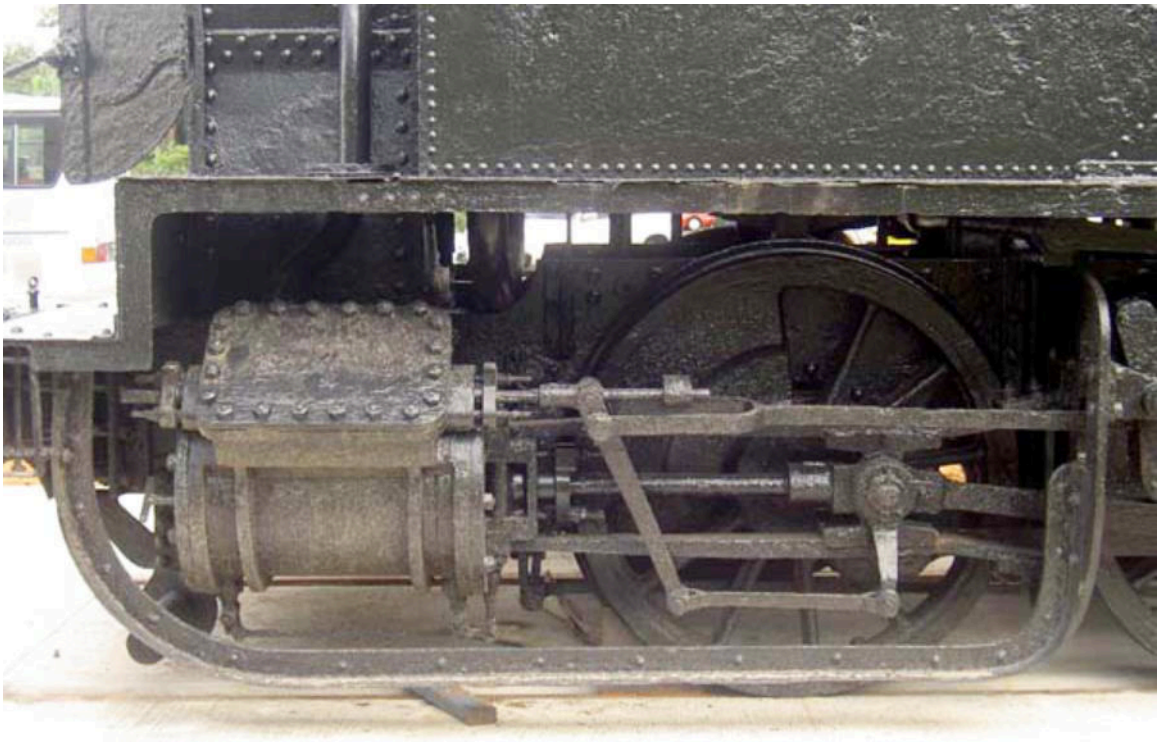


An F-B type 88 engine.



And a photo of the same no. **705**, but wiith a different cab – small side openings and no clerestory.

The type 88 tank loco that was rescued from the bottom of Gatún lake.



A view of the left hand cylinder and motion of that rescued loco, showing the strange curved rail running from buffer beam to motion bracket beneath the cylinder. This may have been a device to minimise damage during derailments, and it is also noticeable that the engine has more conventional derailing bars beneath the buffer beams at each end.

This partial view of a type 88 engine at work with a bucket chain excavator during the 1880s show that the motion protector angle irons were an original or at least a very early fitting.

0-4-0VBT 'engines with winch' d/w ?, cyls. ?, built by Franco-Belge in 1883

As can be seen in Appendix 2, the two *treuils roulants* survived into US ownership when they were referred to as 'Special' locomotives or as 'engines with winch'. Both were in service – at Empire and Gorgona shops respectively – in 1910, and one was listed in 1912.

? w/n 479?

? w/n 480?

Second-hand locos for spares

AC reported: In January, 1908, two second hand steam locomotives were imported from the U.S. It is not known if they were put into service or just acquired for parts.

4-4-0 d/w 62", cyls. 17x24", built by Baldwin in 1891

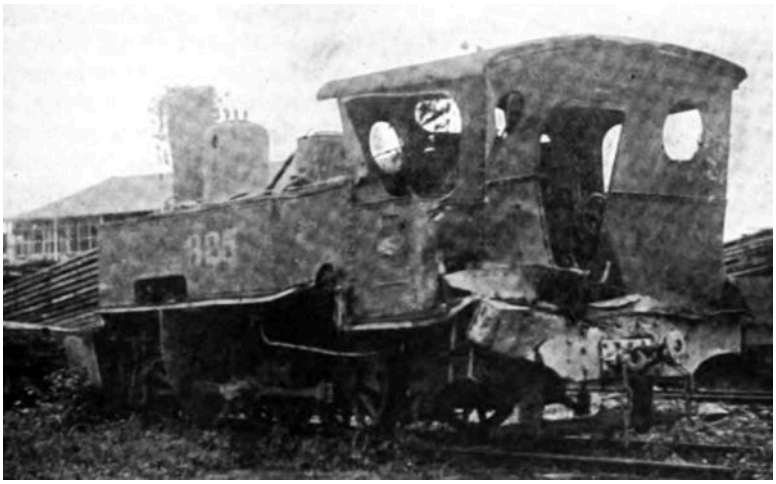
Ordered for the St. Louis, Alton & Springfield RR as nos. **6**? and **15**, became Chicago, Peoria & St. Louis RR nos. **106** and **?**. BLW class 08-28C nos. 785? and 809; specs. in vols. 15 p245 and 17 p192.

? w/n ?

? w/n 12372

Caution re loco running numbers

Whilst the newly-arrived tender engines may well have retained their officially allocated number series, several photos suggest that the older French- and Belgian-built tank locos were sometimes renumbered out of sequence.



This rather smashed up F-B type 27 engine appears to be carrying the number **325**, which fits no known number series either French or American for such a machine.

The nearer of these two type 88 0-6-0Ts is carrying the number **103**, again totally out of any known sequence for these engines.

The further one carries the number **159**. Source [18] identifies these as having originally been *CUCI* nos. 540 and 629, but that makes no sense at all. Certainly F-B nos. 540 and 629 had been *CUCI* engines **103** and **159** but they were both type 27 machines, not type 88 as seen here.

Another type 88 engine bearing an unusual number, in this case ICC **118**.

Rate for Use of French Locomotive.

CULEBRA, C. Z., July 31, 1911.

CIRCULAR No. 169-1:

Circular No. 169-F prescribes a rate of $6 an hour for the use of a French locomotive, including crew, as between departments and divisions of the Commission and Panama Railroad Company. This rate was based on the operation of the engine by a "gold" engineer.

A rate of $2.50 an hour for switch engine service, when the engine is operated by hourly silver employes, is hereby established.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Repairs to Locomotives.

CULEBRA, C. Z., January 5, 1910.

CIRCULAR No. 300:

Effective this date the following rules govern repairs to locomotives of the Isthmian Canal Commission and Panama railroad in Gatun, Cristobal and vicinity:

1. Heavy repairs, on which the labor cost is $500 or more, to all locomotives of the Isthmian Canal Commission and Panama railroad shall be made at the Gorgona shops. The Panama railroad may complete the rebuilding of the remainder of the 100-class engines at the Cristobal shops, the material and parts having already been assembled there and the work partly done.

2. All light repairs, the estimated cost of which for labor will exceed $50, but is less than $500, to all locomotives of the Isthmian Canal Commission and Panama railroad in Cristobal, Gatun and vicinity, shall be made at the Cristobal shops.

3. Running repairs to Isthmian Canal Commission locomotives at Gatun and vicinity, estimated to cost not more than $50 for labor, and the hostling of these locomotives, shall be done at Gatun.

GEO. W. GOETHALS,
Chairman, Isthmian Canal Commission,
President, Panama Railroad Company.

Water Coolers on Locomotives.

The Chairman and Chief Engineer has issued a circular letter, dated June 9, 1909, to the division engineers of the three construction divisions of the Canal work, directing them to install water coolers, of suitable size, for drinking water on all locomotives that are moved outside the limits of the various railroad yards in the Canal Zone.

Given how tough work on the canal was, it is a surprise to find this report of all mainline locos being required to have water coolers fitted for the benefit of the crews. Presumably these were evaporative coolers, probably the only type available at that date.

Other rail-borne steam equipment used during the canal construction work

The excavation of the canal was an immense undertaking and, as well as the hundreds of steam locomotives listed above, there was a multituide of other rail-mounted machinery driven by steam. These included excavators, pile drivers, Lidgerwood winches and other devices, and all manner of other equipment. A single photo is displayed here as a taster.

Culebra Cut shovel no. **215**.

The disposal of locomotives after the completion of the canal.

Sale of 95 Retired Locomotives.

Sealed proposals for the purchase of 95 retired locomotives of various classes will be received in the office of the Chief Quartermaster, The Panama Canal, Balboa Heights, C. Z., until 10.30 a. m., August 23, 1916. Circular 1057, giving full information, form of contract, bond, etc., may be obtained upon application to the Chief Quartermaster.

Disposal of Retired Locomotives.

The overhauling and crating of 95 locomotives formerly used in the construction of the Canal, since sold to a contractor, is being carried on by the Mechanical Division, with the supervision of representatives of the contractor. Ten were crated and shipped last month.

Ten of the old Canal locomotives had been transferred to the Alaskan Engineering Commission, two were sold to the Chile Exploration Company direct, and 95 were sold to the A. B. Shaw Company. The latter company has sold 18 of its purchase to the Chile Exploration Company, and the remaining 77 are being sent to New York.

The locomotives sold to the A. B. Shaw Company were all of the Mogul type, 2–6–0, and 5-foot gage; they consisted of 22 of the type designated as the 101-class, weighing 234,000 pounds over all; 22 of the 201-class, weighing 222,500 pounds; 38 of the 301-class, weighing 210,210 pounds; and 13 of the 601-class, weighing 234,500 pounds.

The Canal Record vol. 10, reported that equipment sold for the Alaska Engineering Commission was to be shipped on the SS *Turret Crown* in Feb 1917: 50 Lidgerwood flats, 11 locos, 2 steam-shovels and 5 dumpcars. 4 large locos, 50 flats and 45 dumpcars had also been ordered and were expected to be shipped at same time. These items were stored at Balboa. See page image below for more detail.

Equipment for Alaska Will Probably Be Shipped Next Month.

The cargo of equipment formerly used on the Canal which has been prepared for shipment to the Alaskan Engineering Commission, as noted in *The Canal Record* of June 14, 1916, is still awaiting transportation. It is stored on the old French pier at Balboa. It is expected, however, that it will be lifted some time in February by the steamship *Turret Crown*, which is due February 15. The only material which has gone forward from the Canal for the Alaskan Engineering Commission is a shipment of 47,000 pounds of copper wire, which was forwarded to San Francisco on September 21 on the steamship *San Juan* of the Pacific Mail Steamship Company.

The material waiting on the pier consists of 50 Lidgerwood flat cars, 11 locomotives, 2 steamshovels, and 5 dump cars. The Commission has sent in an order for four large locomotives in addition to the above, 50 flat cars, and 45 dump cars, and it is expected to have them ready for the *Turret Crown*.

Of the material which has been in readiness under the previous order, four of the locomotives are of the kind known on the Isthmus as the 201-type, which is a mogul type, class 2-6-0, weighing 112½ tons with the tender and having a length over all of 62 feet 2 inches; one is of the 301-type, essentially the type of the 201 but smaller, having weight of 105 tons and length over all of 59 feet 2 inches; and six are 42-inch gauge engines carrying all weight on the drivers (type 0-6-0) for hauling on steep grades, with a weight of 33.4 tons and length over all of 28 feet 11 inches. The two steamshovels are 70-ton Bucyrus. The dump cars are 12-yard Oliver. All of the rolling stock except the narrow gauge locomotives has been changed from the Isthmian standard gauge of 5 feet to the United States standard of 4 feet 8½ inches.

These details of locos sold were in *The Canal Record* vol. 10 p581, 25 July 1917.

Sale of Locomotives, Dump and Flat Cars.

Sealed bids will be received in the office of the Chief Quartermaster up to 10.30 o'clock, a. m., June 2, 1919, and then opened, for the purchase of 4 locomotives, 33 Western dump cars, steel, and 150 flat cars, wooden. Detailed description of this equipment and form of proposal may be had upon application to the office of the Chief Quartermaster, The Panama Canal, Balboa Heights, C. Z. The Panama Canal reserves the right to reject any or all bids.

Later users of Panamanian locomotives from the US canal construction era

This list mostly comes from Reimar Holzinger's Panama list and may well owe a lot to Allen Copeland's list.

US armed forces and other federal organisations

AAR	Alaska Railroad
AEC	Alaska Engineering Commission
PCC	Panama Canal Commission
USArmy	US Army
USEng	US Engineers
USQMC	US Quartermaster Corps
USWD	US War Department
CZ	Panama Canal Zone.

Agents and resellers

BR&L	Birmingham Rail & Locomotive
A.B.Shaw Co., Chicago, Illinois	
Equitable Equipment Co., New Orleans, Louisiana	
SI&E	Southern Iron & Equipment, Atlanta, Georgia

Railways and industrial plants

CDoChB	Coast Defences of Chesapeake Bay, Virginia
ChExCo	Chile Exploration Co., Chuquicamata
CLbr	Conroe Lbr.Co., Texas
CStC	Carnegie Steel Co.
DC&S	Detroit, Cairo & Sandusky Railway
DLLbr	Delta Land & Labor Co.
D&Ne	Duluth & Northeaster RR
EHYPT	Edward Hines Yellow Pine Trustees
ES&NA	Eureka Springs & Northern Arkansas Ry., Ark.
FCMCh	*FC Mineral de Chiquicamata* (ChExCo, Chile)
GRCo	Gulf Refining Co., Texas
GT&MCo	Grant Timber & Manufacturing Co.
GTW	Grand Trunk Western Ry.
G&Wy	Genessee & Wyoming Ry., New York
H-D-E	Hillyer-Deutsc-Edwards Co., Louisiana
KLbr	Kirby Labor Co., Texas
LCLbr	Louisiana Central Labor.Co., Louisiana
LSt&G	Lawrence Stone & Gravel Co.
McCLbr	McCleary Labor Co., Washington
MC&StA	Moscow, Camden & St. Augustine Ry., Texas
MVCM	Mt. Vernon Car Manufacturing Co., Illinois
NCCo	National Cement Co., Alabama
NWRRSoCa	Northwestern Railroad of South Carolina, South Carolina
Ou&Nw	Ouchita & Northwestern Ry
P-WLbr	Peavy-Wilson Labor Co., Colorado
S&NV	Sabine & Neches Ry.
StRPC	St. Regis Paper Co., New York
TRMM	T. R. Miller Mill Co., Alabama
TT&TCo	Transport Trading & Terminal Corp.
TVA	Tennessee Valley Authority
WCh&W	Wabash, Chester & Western RR
WFR&FW	Wichita Falls, Ranger & Fort Worth RR.

15.1.6 The Panama Railroad after the completion of the canal

1914? or 1920-1947

Background

Gauge 5' 0" or 1524 mm.

2-6-0 d/w 54", cyls. 19x24", built by ALCo in 1906

Ordered for ICC (Panama RR). These engines had originally been designated ICC **209**… and when transferred to the PRR they retained the same numbers.

PRR **209**	w/n 39100	Later to US War department according to source [13].
PRR **214**	w/n 39105	Later to US War Department in the Canal Zone, and was at Mount Hope in 1934.
PRR **216**	w/n 39107	Scrapped 1934?
PRR **232**	w/n 39143	AC says was at PRR shops assigned to Mechanical Divn. in 1934 as no. **232**.
PRR **238**	w/n 39149	Later to US War Department in the Canal Zone, and used at Mount Hope by the Supply Divn., there in 1934 as no. **238**. Source [13] says it went to Kirby Lumber Co.
PRR **241**	w/n 39152	Later to Panama Canal Commission in 1934 with no. unknown; then to McCleary Labor Co., Washington no. **6**.
PRR **243**	w/n 39154	Later to US War Department in the Canal Zone. at Fort Sherman, where in use as no. **243** in 1943; Later possibly to Southern Iron & Equipment, Atlanta, Georgia as their no. **2119**; then to HillyerDeutsc-Edwards Co., Louisiana. no. **100**, scrapped 1956?
PRR **255**	w/n 39166	Later to US War Department in the Canal Zone as no. **255**. and in use at Camboa by the Dredging Divn. in 1934.
PRR **256**	w/n 39167	Later to US War Department in the Canal Zone as no. **256**. At Mount Hope (Supply Divn.) in 1934. AC suggests another report had it at Fort Benning in Georgia through 1934.
PRR **274**	w/n 39185	Withdrawn 1934?
PRR **285**	w/n 39196	Later to Alaska Engineering Commission/Alaska Railroad no. **285** scrapped 1947.
PRR **286**	w/n 39197	Later to US War Department in the Canal Zone as no. **286**, named **'GENERAL J. J. MORROW'**. Used on isolated line west of Gatún locks called Mindi Dyke. Still there 1934. Scrapped.
PRR **290**	w/n 39201	Withdrawn 1947?
PRR **291**	w/n 39202	Withdrawn 1934; then to Panama Canal Commission?
PRR **292**	w/n 39203	A letter from the Panama RR to the Army assigned No. **292** along with four boxcars, two stock cars and two flats cars to the Army, to be kept on standby with steam up, 24 hours a day at a cost of $500. (Source Allen Copeland, but date of letter unknown). Later to US Army.
PRR **299**	w/n 39210	Withdrawn 1934? or 1947?; From 1955 plinthed in the Canal Zone,

from 1979 plinthed at Paterson N.J.

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

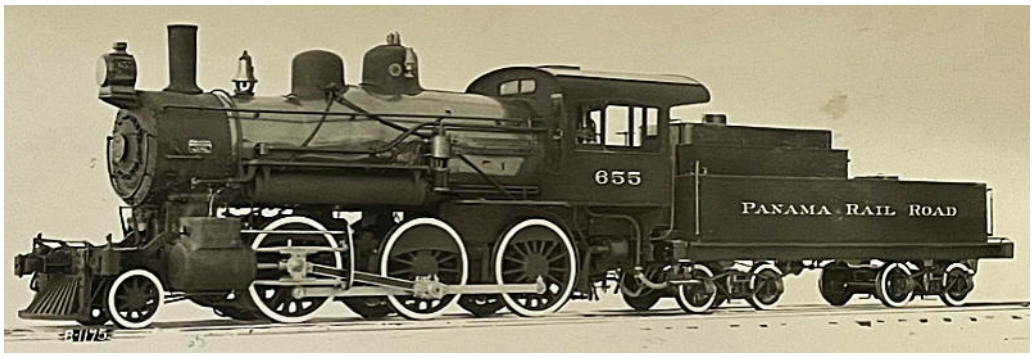
Ordered for ?

PRR **302**	w/n 30052	Later Panama RR no. **502**?; then to US Engineers' Depot as no. **7**, and on to US War Department at Mira Loma QMD depot, California, as no. **6931**; Advertised for sale via War Assets Administration in 1947. Scrapped 1949?
PRR **309**	w/n 30123	Then to US Army no. 309, Repaired at Fort Benning, Georgia, in 1923, was at Fort Belvoir, Virginia in 1944 as USATC no. **6975**; to US Penitentiary, Lorton, Virginia as no. **6975**. Retired 1948.
PRR **311**	w/n 30141	then to US War Department – Panama Canal Zone , at Fort Kobbe as no. **311** in 1934. AC comments that other sources have this engine as QMC-USA no. **6237** at Fort Benning, Georgia from 1927 through 1934. Then at Osborne, Ohio, in 1942 with the boiler off ICC **334** owing to fire damage on NYC(?) Then became USATC no. **6936** at Fort Benning, then on to Brookley Field, Alabama. For sale there via War Assets Administration in 1945-46.

2-6-0 d/w ?, cyls. ?, built by ALCo in 1908

Ordered for ?

PRR **651**	w/n 45845	Withdrawn 1934?
PRR **652**	w/n 45846	
PRR **653**	w/n 45847	Withdrawn 1934?
PRR **654**	w/n 45848	Withdrawn 1934?
PRR **655**	w/n 45849	Withdrawn 1934?
PRR **656**	w/n 45850	
PRR **657**	w/n 45851	Withdrawn 1934?
PRR **658**	w/n 45852	
PRR **659**	w/n 45853	Withdrawn 1934?
PRR **660**	w/n 45854	Withdrawn 1934?
PRR **661**	w/n 45855	Withdrawn 1934? or 1947?
PRR **662**	w/n 45856	Withdrawn 1947?



PRR no. **655** ALCo publicity card photo.

JW 2264

AMERICAN LOCOMOTIVE COMPANY,
NEW YORK.

Class 260–147 — Road Number, 655

BUILT FOR THE PANAMA R. R.

GAUGE OF TRACK	CYLINDERS		DRIVING WHEEL DIAMETER	BOILER		FIRE BOX		TUBES		
	Diam.	Stroke		Diameter	Pressure	Length	Width	Number	Diameter	Length
5′–0″	20″	26″	63″	64″	200 lbs.	108 1/8″	41 1/4″	316	2″	12′–3 3/16″

WHEEL BASE			WEIGHT IN WORKING ORDER—POUNDS.			
Driving	Engine	Engine & Tender	Leading	Driving	Engine	Tender
14′–6″	22′–8″	57′–0″	21000	125600	146600	108540

FUEL	HEATING SURFACES, SQUARE FT.			GRATE AREA SQ. FT.	MAXIMUM TRACTIVE POWER	FACTOR OF ADHESION
Kind	Tubes	Fire Box	Total			
Oil	2016	181	2197	31	28100 lbs.	4.47

Tender, Type 8-Wheeled. Capacity, Water 5000 Gals. Fuel, 2300 Gals.

NEGATIVE No. B-565

PRR no. **655** ALCo publicity card detaills.

The fleet in 1925

As reported in [4] page 137. A table states that the railway in 1923 possessed twelve road engines and twelve switchers, and compares these totals to 1912 when there had been forty-one road engines and twenty-two switchers. The engines mentioned for 1923 were apparently of classes 201 and 651, but it is not clear whether these were all classed as road engines or whether the 651 class machines were designated as switchers.

The fleet in 1934

AC says that the roster of PRR locos in service in May 1934 included: **216, 274, 299, 651, 653-655, 657, 659-661**. He also reports: Another report from 1934 shows twelve 201-class (1 stored in bad condition) and eleven 651-class (2 stored in bad condition). Nos. **241** and **291** were assigned to the Panama Canal Co.

2-6-0 d/w 63", cyls. 18x26", built by ALCo in 1940

Ordered for ?

PRR **701**	w/n 69287	Withdrawn 1947?
PRR **702**	w/n 69288	Withdrawn 1947?
PRR **703**	w/n 69289	Withdrawn 1947?
PRR **704**	w/n 69290	Withdrawn 1947?
PRR **705**	w/n 69291	Withdrawn 1947?

The obverse and reverse of an ALCo sales card showing no. **704**.

Class, 260 S 168 — Road Number, 704

BUILT FOR THE PANAMA RAILROAD.

GAUGE OF TRACK	CYLINDERS		DRIVING WHEEL DIAMETER	BOILER		FIRE BOX		TUBES		
	Diam.	Stroke		Inside Dia.	Pressure	Length	Width	Number	Diameter	Length
5′-0″	18″	28″	63″	66″	250 lbs.	115⅛″	41¼″	166 28	2″ 5½″	12′-0″

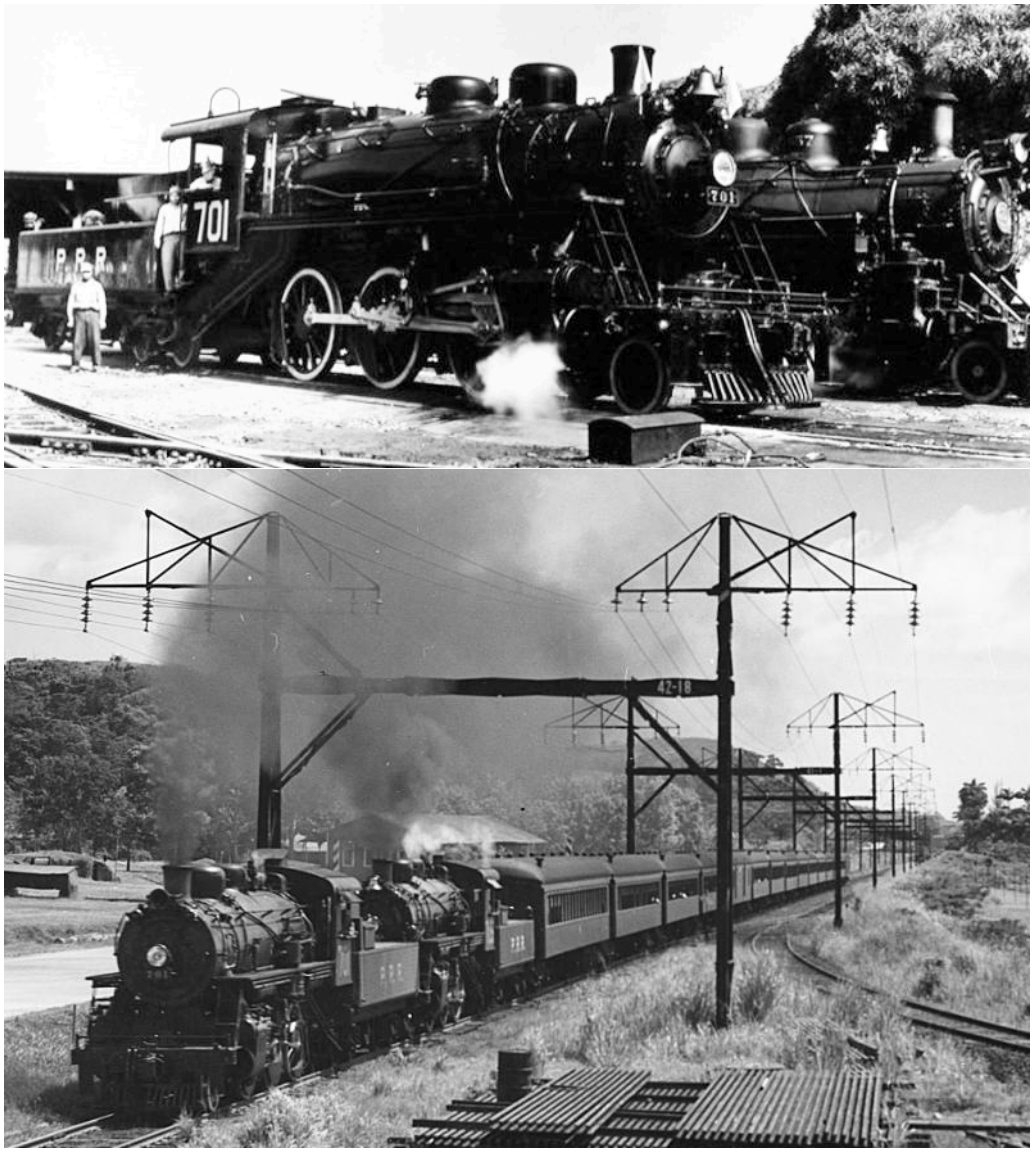
WHEEL BASE			WEIGHT IN WORKING ORDER – POUNDS			
Driving	Engine	Engine & Tender	Leading	Driving	Engine	Tender
14′-0″	22′-9″	57′-4½″	21000	147000	168000	110000

FUEL	EVAPORATING SURFACES, SQ. FT.				SUPERHEATING SURFACE SQUARE FT.	GRATE AREA SQ. FT.	MAXIMUM TRACTIVE POWER	FACTOR OF ADHESION
Kind	Tubes	Flues	Fire Box	Total				
Oil	1035	469	170	1674	389	33	28400 lbs.	5.17

Tender, Type 8-Wheeled — Capacity, Water, 5000 Gals — Fuel, 2300 Gals

ORDER No. S-1822

March, 1940



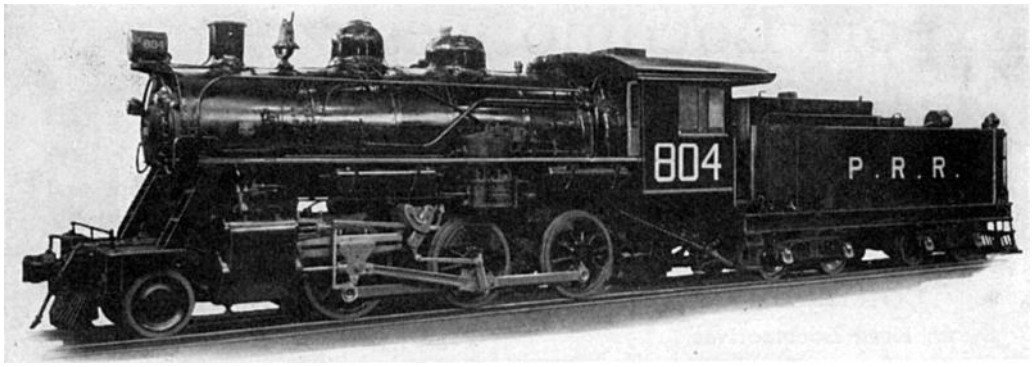
A double-headed passenger train in December 1942 is seen running under a typical scene of overhead high-tension power lines. These were for general power supply, not for traction on the railroad.

2-6-0 d/w 54", cyls. 19x24", built by Porter in 1941-2

Ordered for the Panama Railroad.

PRR **801**	w/n 7323	Withdrawn 1947?
PRR **802**	w/n 7324	Withdrawn 1947?
PRR **803**	w/n 7325	Withdrawn 1947?
PRR **804**	w/n 7326	Withdrawn 1947?
PRR **805**	w/n 7327	Withdrawn 1947?

PRR **806** w/n 7328 Withdrawn 1947?



A Porter photograph of one of this batch, as displayed in *The Locomotive Cyclopedia* 1947.

The fleet in 1947

AC records the roster of PRR locos in service 1947: **290, 299, 401-405** (GE Bo-Bo diesel electric switchers), **661, 662, 701-705**, and **801-806**.

Loco totals recorded in the Panama RR company annual reports

The company's annual reports to shareholders usually included a table showing the total numbers of road engines and yard engines or switchers. Occasionally other information crept in but motive power was actually a very small part of the concerns of a business which also ran steamships, supplied comestibles, and even made ice-cream!

1906

Standard 80-ton locos now up and in use: 24

1907

Erected for the ICC 14 114-ton Cooke mogul locos

RR began using shops at Cristobal from Nov 15 1906.

Extensive repairs to 18 PRR locos

1908

June figures: 27 road engines, 26 switchers

24 locos purchased during previous year. Automatic couplers being introduced.

1909

June figures: 38 road engines, 27 switchers, of which 12 road engines received during year, and 1 road engine reclassified as a switcher. 14 locos in ICC service.

12 new oil-burning engines received, erected and in use.

1910

June figures: 41 road engines, 27 switchers (June 1909 figures now quoted as 43 and 27) 2 road engines destroyed during previous 12 months. 5 locos in ICC service.

1911

June figures: 41 road engines, 22 switchers. 5 switchers destroyed during previous 12 months.

Repair costs light, owing to 600 class locos being new.

1912

June figures: 41 road engines, 22 switchers, including 19 locos in ICC service.

Loco repairs now taking place at Gorgona rather than at Cristobal.

1913

June figures: 43 road engines, 18 switchers, after 1 switcher destroyed and 2 reclassified at road engines, also 1 switcher sold during previous 12 months.

1914

June figures: 14 road engines, 4 switchers, after 5 road engines and 14 switchers destroyed, and 24 road engines placed in storage for sale.

19 locos retired during previous 12 months, presumably owing to winding down of canal construction work. Clear that costs were down owing to locos needing repair being taken out of service rather than being worked on.

1915
June figures: 12 road engines, 4 switchers, after 2 more road engines placed in storage for sale. 26 road engines now in storage. Costs up again as locos needing repair had to be worked on.
1916
June figures: 12 road engines, 1 switchers, after 1 switcher destroyed and 2 placed in storage during previous 12 months.
1917
June figures: 12 road engines, 0 switchers, owing to the only switcher being transferred to Canal administration, Mech. Divn.
1918
June figures: 12 road engines, 0 switchers, no changes.
1919
June figures: 16 road engines, 44 switchers, after the transfer of 4 road engines and 49 switchers from the Canal administration, and then 5 of those switchers being placed in storage.
1920
June figures: 37 road engines, 18 switchers, after 21 switchers were reclassified as road engines and 5 went back to the Canal administration.
1921
June figures: 14 road engines, 18 switchers, after 8 road engines had been reclassified as switchers and another 15 had been transferred to the Canal Administration, and 8 switchers had been placed in store.
1922
June figures: 12 road engines, 12 switchers, after 2 road engines and 14 switchers had been transferred to the Canal Administration.
1923
June figures: 12 road engines, 12 switchers, no change.
1924
June figures: 12 road engines, 12 switchers, no change.
1925
June figures: 12 road engines, 12 switchers, no change.
"A superheated steam Weed Destroyer was built at Balboa shops and fitted to locomotive No. **601**. The grid and apparatus for working the wings were mounted on a steel flat car, and the work performed so far has been very satisfactory."
1926
June figures: 8 road engines, 9 switchers, after 4 road engines and 3 switchers had been placed in storage.
1927
June figures: 12 road engines, 12 switchers, no explanation for changes during previous 12 months.
1928
June figures: 12 road engines, 12 switchers, no change.
1929
June figures: 12 road engines, 12 switchers, no change.
1930
June figures: 12 road engines, 12 switchers, no change.
1931
June figures: 12 road engines, 12 switchers, no change.
Locomotive no. **654** was fitted with superheater, for main line work and for use in connection with the weed burner outfit. Major overhauls made on 9 locos in addition to the regular maintenance and running repairs.
1932
June figures: 11 road engines, 12 switchers, with one road engine having been destroyed during the year. "The loss of one road locomotive was due to a main line wreck which occurred during the year whereby one of the saturated steam locomotives was so badly damaged that it was considered not worth repairing. … The total cost of locomotive overhauls and maintenance amounted to $104,528.41, which included $19,632.34 for converting locomotive No. **660**

into a superheater for main line work. The conversion of locomotive No. **660** to superheat completes the program of converting one-half of the 651-type locomotives to superheat and retaining one-half as saturated steam locomotives. This provides six superheat locomotives for road work. Major overhauls were made on 3 locomotives in addition to the regular maintenance and running repairs.

1933

June figures: 11 road engines, 12 switchers,

No new cars were built during the year and no alterations of consequence made to cars or locomotives with the exception of the installation of wash basins with running water in the toilets of first-class coaches.… The total cost of locomotive overhauls and maintenance during the year was $84,933.60 which included $25,961.99 for heavy repairs to seven locomotives.

1934

June figures: 11 road engines, 12 switchers, no changes.

1935

June figures: 6 road engines, 9 switchers, after 5 road engines and 3 switchers had been destroyed.

"At the close of the fiscal year there were 6 road locomotives, 9 yard locomotives. 55 passenger can, 772 freight cars. 3 motor cars, and 5 pieces of miscellaneous equipment in service. As part of the studies being earned on by the recently established Plans Section with a view toward effecting economies in operating and maintenance expenses, an analysis of the equipment requirements was made. It was found that 5 road and 3 yard locomotives. which had been set aside without repairs several years ago, would not be needed. Sixty-four freight cars and a steam ditcher were also found to be unnecessary. This equipment was surveyed and is being broken up.

1936

June figures: 17 road engines, 12 switchers, just one switcher had been retired from the 1935 totals which were now quoted as having been 17 and 13 respectively. NB These figures do not make sense, given the totals quoted for 1935 and 1937.

1937

June figures: 8 road engines, 9 switchers, Two locomotives, which had been surveyed and written out of the accounts in 1935, were overhauled and reinstated in the Capital Accounts…"

1938

June figures: 8 road engines, 9 switchers, no changes.

1939

June figures: 8 road engines, 9 switchers, no changes.

1940

June figures: 8 road engines, 9 switchers, no changes.

"Rolling Stock At the close of the fiscal year there were 8 road locomotives, 9 yard locomotives, 47 passenger cars, 700 freight cars, 4 motor cars, and 5 pieces of miscellaneous equipment in service. In October 1939 contracts were let for five steam and five diesel-electric locomotives. At the close of the fiscal year the five steam locomotives, which are a modernized type of our present road locomotives, were undergoing their final test."

1941

June figures: 11 road engines, 13 switchers, after 5 road engines were received during the year and 2 retired, also 5 switchers received (presumably the new diesels) and 1 retired.

"At the close of the fiscal year there were 11 road locomotives, 13 yard locomotives, 47 passenger cars, 755 freight cars,4 motor cars, and 5 pieces of miscellaneous equipment in service. The ten locomotives and fifty freight cars contracted for last year were received and placed in service during the early months of the new fiscal year. As they proved insufficient in number to handle the increasing business, it became necessary to contract for the purchase of six additional steam locomotives, thirty-five flat cars, …"

1942

June figures: 17 road engines, 13 switchers, after 6 new road engines had been received.

"At the close of the fiscal year there were 17 road locomotives, 13 yard locomotives, 47 passenger cars, 835 freight cars, 4 motor cars, and 5 pieces of miscellaneous equipment in service. The six locomotives and eighty freight cars contracted for the previous year were received and placed in service during fiscal year 1942."

1943

June figures: 17 road engines, 13 switchers, no changes.

1944

June figures: 17 road engines, 13 switchers, no changes.

1945

June figures: 17 road engines, 12 switchers, after one yard loco had been retired during the year.

1946

June figures: 17 road engines, 12 switchers, no changes.

1947

June figures: 11 road engines, 8 switchers, after 6 road engines and 4 switch engines had been retired during the year.

1948

June figures: 10 road engines, 8 switchers, after 1 road engine had been retired during the year.

1949

June figures: 5 road engines, 13 switchers, possibly because 5 road engines had been reclassified as switchers, though no explanation was given in the table. On the other hand the paragraph in the text report says that there were 5 Diesel-electric locomotives and 13 steam locomotives in service.

1950

June figures: 5 road engines, 13 switchers, no changes.

The text report explains that steam mileage had reduced by 53,642 miles, and diesel mileage increased by 26,138 miles when compared with the previous year. The total this year was 295,299 miles.

1951

June figures: 5 road engines, 13 switchers, no changes.

The end of steam

The PRR purchased three ALCo A1A-A1A diesel electrics in 1951, and then three Bo-Bo locos by EMD in 1962. Presumably this resulted in the withdrawal of all steam but the precise dates are currently unknown.

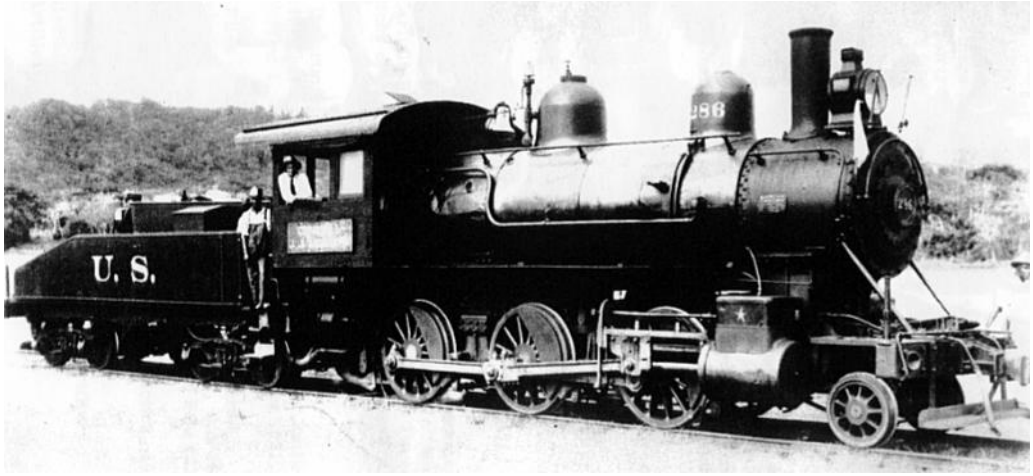
15.1.7 The US Army in the Canal Zone

Background

Gauge 5' 0". The Canal Zone, a 10 mile wide strip of land along the line of the canal, was US territory until it was handed back to Panama in 1979 As a location of extreme strategic importance it obviously contained a number of military installations.

Copeland reports that as of 4/11/1934, the following locos were used in Panama by the U.S. Army. Unless otherwise explained, these were all moguls built at the beginning of the century for the ICC and listed previously in section 15.1.3.

- At Mt. Hope (Supply Division) depot on the PRR mainline south of Colón and Cristobal **214, 238, 256**
- At Balboa Shops (Mechanical Division) **232, 441** (see below).
- At Fort Sherman **243**. This location, and the earlier works of the ICC at Shelter Bay, were completely isolated from the PRR and all locos and stock had to be brought in by sea.
- At Gamboa (Dredging Division) **255**.
- At Gatún Dam **286**. The Mindi Dyke and west spillway railway west of the Gatún locks was also isolated.



A photo from [14] showing no. **286** in service on the Gatún dam west spillway line and bearing the name **'GENERAL J. J. MORROW'** on its cabside.

- At Fort Kobbe **331**.

A letter from the Panama RR to the Army assigned No. **292** along with four boxcars, two stock cars and two flats cars to the Army, to be kept on standby with steam up, 24 hours a day, at a cost of $500.

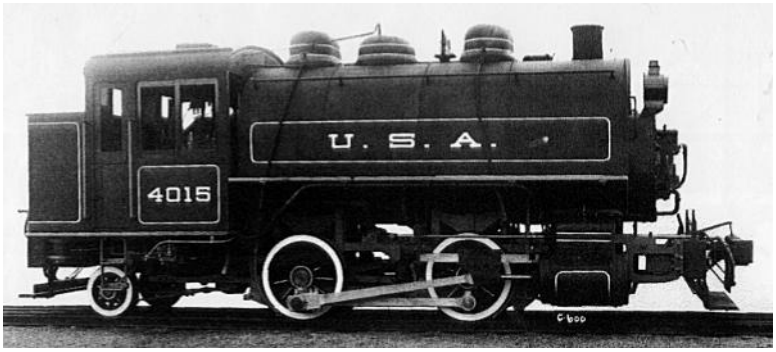
Additional steam locos

0-4-2ST d/w ?, cyls. ?, built by ALCo Cooke in 1920

Ordered for

WD **4015**	w/n 61710
WD **4016**	w/n 61711

Charles Small [14] suggests that in 1948 an old loco was tipped off the track at Fort Sherman at the time that the railway there was abandoned, and speculates that this might have been one of these 0-4-2STs.



An ALCo builder's photo, from source [14].

0-4-2ST d/w 36", cyls. 12x16", built by VIW in 1930

Ordered for ?

US **441** w/n 4053

0-6-0 d/w 50", cyls. 19x26", built by Porter in 1918

Ordered for US War Department as their nos. **1-8**, Porter 6153-6160. Three transferred from other US locations in May 1935 and regauged to 5' 0".

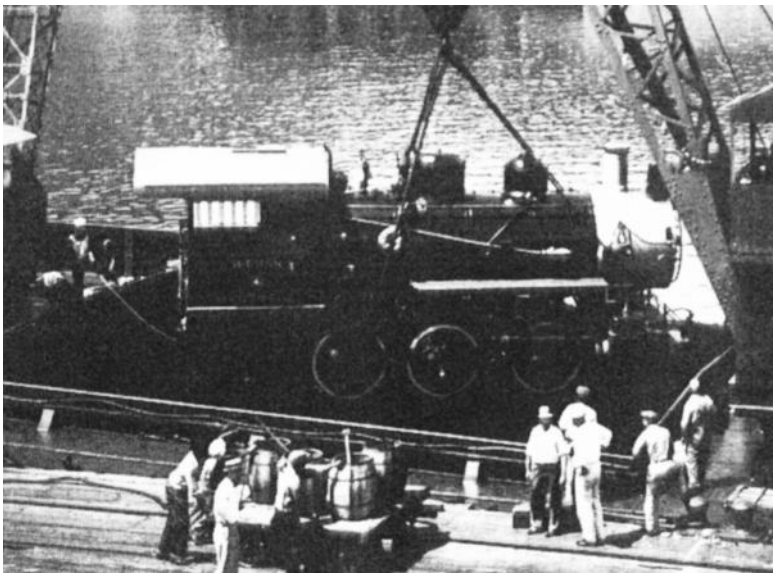
AC notes: The three Porter 0-6-0s were built during 1918 for use in the U.S. In May 1935 these three were converted to 5' 0" gauge and sent to Panama. Pictures exist of one being unloaded with the number QMC-USA **6534**. One of these locomotives was Porter 6159, built as U.S. Ordnance Dept. **117** (? not if Connelly's Porter list is correct). This loco was removed from Panama and sent to Portland, Ore. as USATC **6928** and used by the Willamette Iron & Steel Co. in Portland for loading 5-ft gauge rail equipment being shipped to the U.S.S.R. A special yard built to this gauge was constructed and connected to a dock where the locomotives and cars could be loaded onto ships. After the equipment had been shipped, the locomotive had the main rods removed and was stored in the Willamette yard. The locomotive was advertised for sale at Gray Field, Fort Lewis, Washington by the War Assets Administration 3/47, but actually remained in Portland on the Willamette property. About 7/47 the locomotive was sold to the California Rag & Metal Co. of Portland, and scrapped by them in August, 1947.

It is probable that the other two Porter 0-6-0s were from c/n's 6153, 6154 and 6156. There are no known dispositions on these three engines. The two Porter 0-6-0s left in Panama were scrapped after World War 2, along with the other Army steam locomotives.

QMC-USA **6534** w/n ?

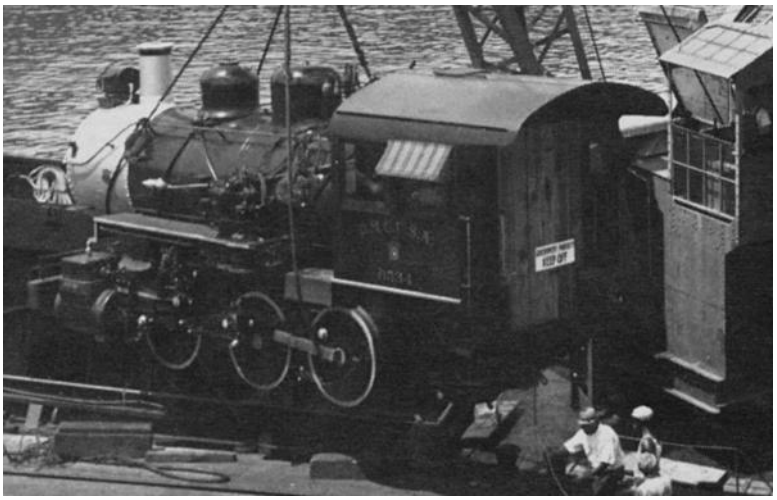
QMC-USA **?** w/n ?

QMC-USA **?** w/n ?



One of the three Porter 0-6-0s being unloaded on arrival in the Canal Zone.
There is lettering on the cabside but it remained illegible even in the source

document, Charles Small's *Military Railroads on the Panama Canal Zone* [14].



No. **6534**. Charles Small, in source [15] says that this shows the loco being loaded for shipment away from the CZ. Both photos seem to have been taken on the same day, so possibly the previous one was wrongly captioned.

It is probably that the steam locomotives were assigned USATC numbers in the 6900-series after 1942.

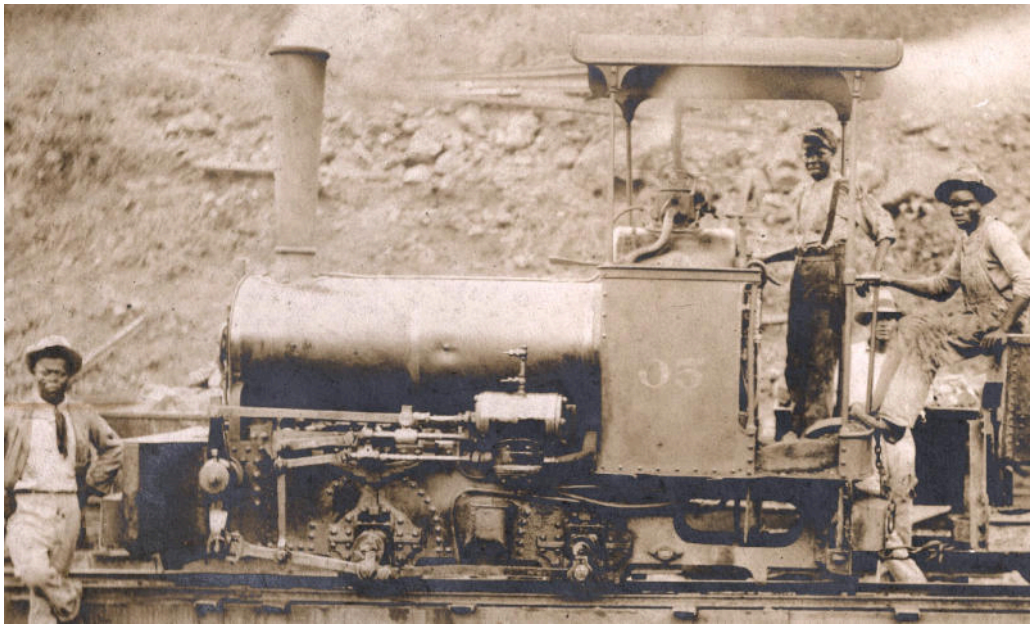
15.2 Narrow gauge construction locomotives of the *CUCI* and ICC

15.2.1 Gauge 500 mm

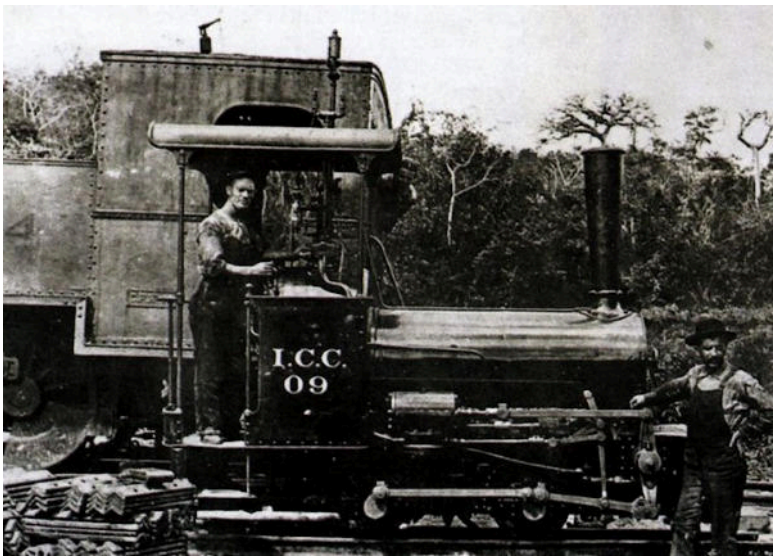
0-4-0T Systeme Bourdon indirect drive d/w ?, cyls. ?, built by Franco-Belge in 1883 (01-02), 1884 (03-010) and 1885 (011-012?)

Ordered for *Couvreux et fil*s, the final two explicitly for *Canal de Panama* according to Jens Merte's FB list. All fourteen came to the ICC, but not all may have re-entered service thereafter. F-B *type 31*. Charles Small wrote (IRR issue 90, Sept. 1981) that FB nos. 481-2 and 485-6 also went to Panama, but that has not been confirmed elsewhere. The late Rodney Weaver pointed out [IRR issue 94 of Sept. 1982] that these engines use the early Brown layout with front-mounted rocking levers, but with Marshall valve gear as commonly used by Corpet.

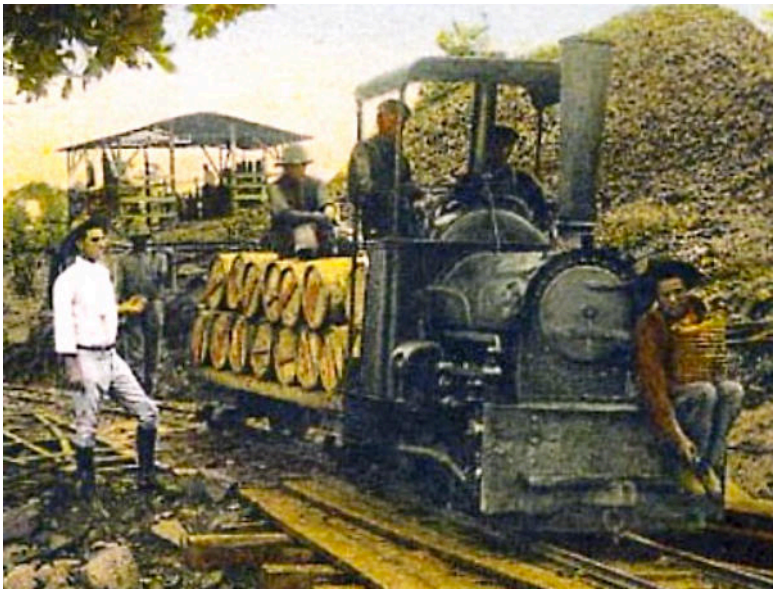
?	w/n 483	Later became ICC no. **?**
?	w/n 484	Later became ICC no. **?**
?	w/n 510	Later became ICC no. **01**
?	w/n 511	Later became ICC no. **02**
?	w/n 512	Later became ICC no. **03**
?	w/n 513	Later became ICC no. **04**
?	w/n 514	Later became ICC no. **05**
?	w/n 515	Later became ICC no. **06**
?	w/n 516	Later became ICC no. **07**
?	w/n 517	Later became ICC no. **08**
?	w/n 518	Later became ICC no. **09**
?	w/n 519	Later became ICC no. **010**
?	w/n 664	Later became ICC no. **?**
?	w/n 665	Later became ICC no. **?**



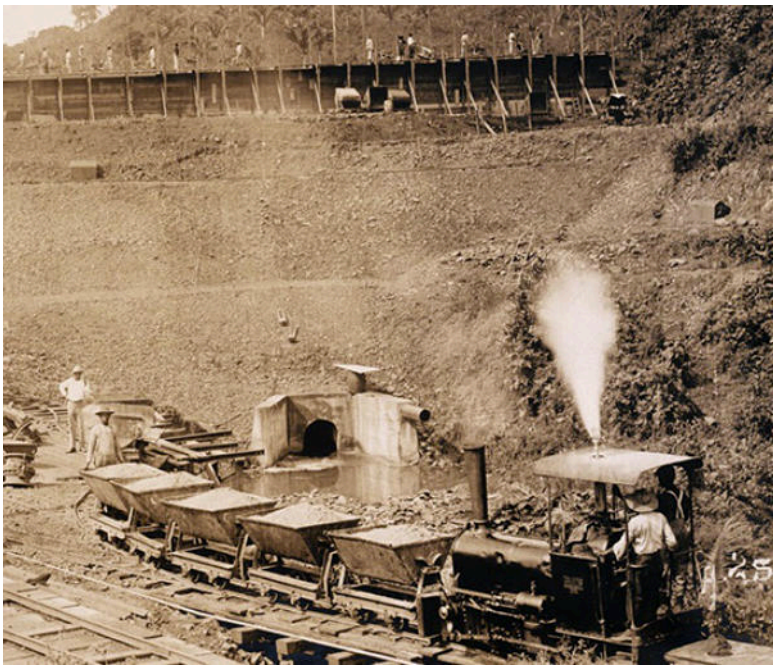
The *Systeme Bourdon* cylinder arrangement, with cylinders and motion largely raised clear of any obstructions, can be clearly seen. This view shows the engine numbered **03** but not carrying the 'ICC' initials that were normally borne under the later US administration. This may mean that those numbers dated from the locos' arrival.



Theodore Roosevelt and his party get a tour of canal works courtesy of one of these narrow gauge engines.



A *systeme Bourdon* loco as seen in a contemporary postcard, supposedly "on the road to Camacho".



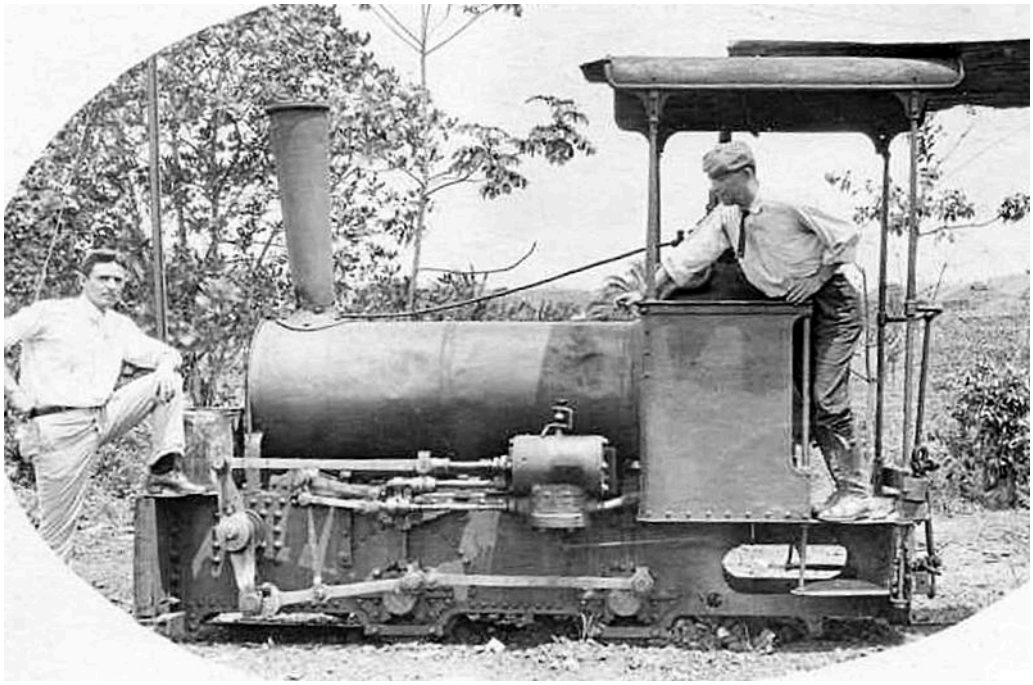
One of the 500mm gauge *Systeme Bourdon* locos working below a dam site.

Bourdon locos no. **06** and **07** during the US construction period.

Later users

The Canal Record vol 4 p381 reported that two Decauville locos were amongst old French items to be sent to the San Francisco Exposition.

Source [18] page 9 has a postcard showing one of these engines in later use in Puerto Rico, supposedly on the San Juan sugar estate.



Whilst this photo taken in Puerto Rico shows the Brown valve gear very well, the fact that it had been vignetted to an elliptical shape confuses matters slightly. It looks as though a piece of corrugated-iron had been affixed somehow to provide more shelter from the sun for the driver. Photo found in Trainiac's Flickr pages at https://www.flickr.com/people/29903115@N06/

Other Franco-Belge NG locos?

M. F. Achard of Paris, writing in 1950 and quoted in Saunders [2], listed other small batches of Franco-Belge-built narrow gauge engines that were constructed either specifically for the canal project or for Couvreux the contractors. Note that there is so far no evidence for any of these machines having reached Panama, but that is certainly possible.

0-4-0T Systeme Bourdon indirect drive d/w ?, cyls. ?, built by Franco-Belge in 1883

Ordered for Couvreux de fils. Built at Raismes. F-B *type 30*. NB Jens Merte's F-B list (not the most trustworthy of his lists) has the first pair as standard gauge, and the others as for 750mm gauge, all for Couvreux.

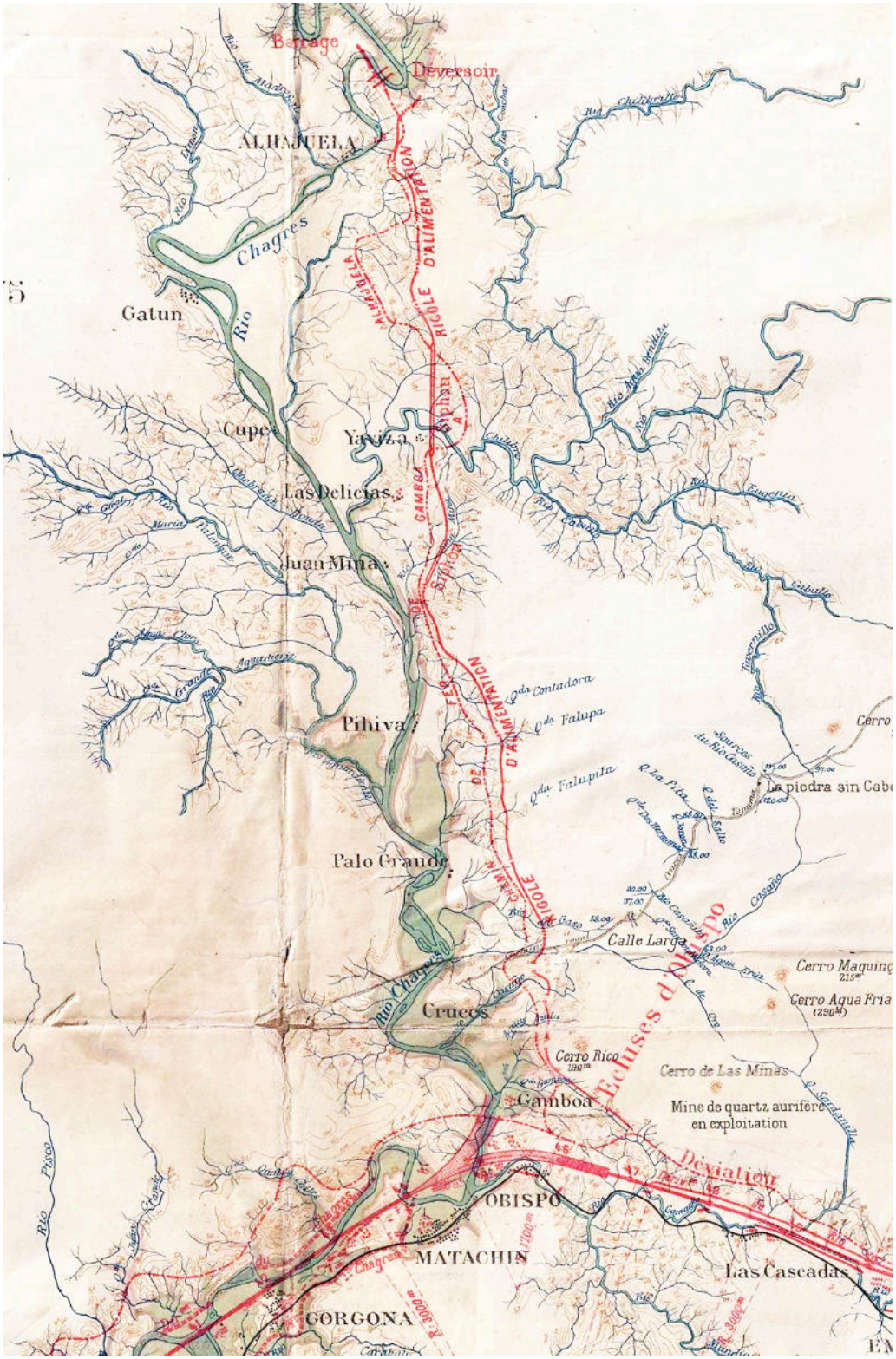
? w/n 477
? w/n 478
? w/n 481
? w/n 482

0-4-0T Systeme Bourdon indirect drive d/w ?, cyls. ?, built by Franco-Belge in 1883

Ordered for Couvreux. Built at Raismes. F-B *type 32*. NB Jens Merte's F-B list (not the most trustworthy of his lists) has these as for metre gauge.

? w/n 485
? w/n 486

15.2.2 The proposed Upper Chagres railroad



At the foot of the map is the black line of the Panama RR, along with the red approximate alignment of the Panama canal as then proposed. Heading up the Chagres river valley is the solid red line of the proposed water supply canal and the dashed and dotted line of the railway that would have been built to aid in the construction and maintenance.NB North is toward the top left corner of the map, ie 45 degrees from where one might assume.

Background

Had the French been pragmatic enough to have accepted earlier that a sea-level canal was beyond their means and abilities, they might have adopted an alternative with a number of locks scattered along the route. This would have in-

volved a summit level lake at Bohio. That would have been a great deal smaller than the eventual Gatún lake created by the Americans, and it would thus have required further management of the upper Chagres river, to control flood surges, to maintain flow in drier periods, and to generate power. The principal means to those ends would have been a dam across the Chagres at Alhajuela, upstream of Gamboa on the Panama RR.

This would have required a new ten mile (sixteen km.) branch railway up the Chagres valley to give access to the dam site. It was to have been built to metre gauge, but the *CUCI* bankruptcy in 1889 halted the scheme. It has been suggested that the locos listed below were originally ordered for this scheme, but were then passed on to the *Soc. d'Entreprise des Colonies Espagnoles* operating in Puerto Rico.

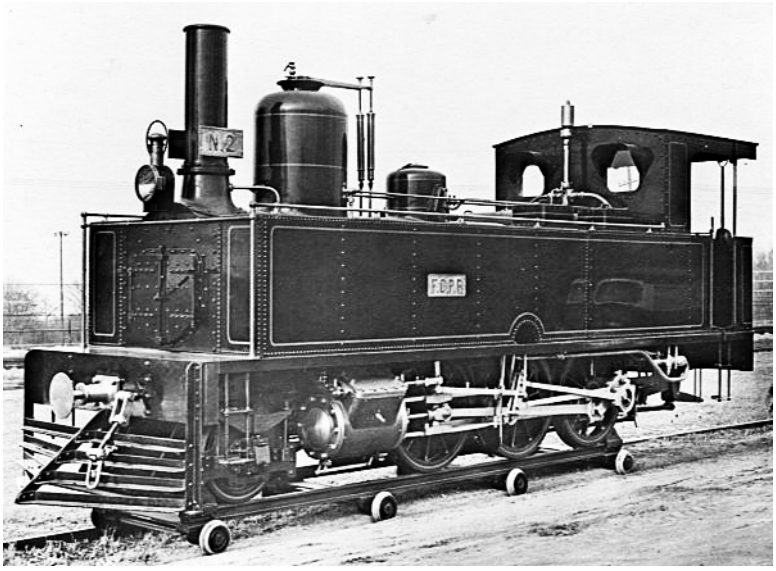
The later *Compagnie Nouvelle du Canal de Panama* resurrected the proposal, though on the 5' 0" gauge of the main PRR, but never seem to have got as far as commencing work.

The later American canal project also considered a dam at Alhajuela, this time to provide drinking water for Panama City.

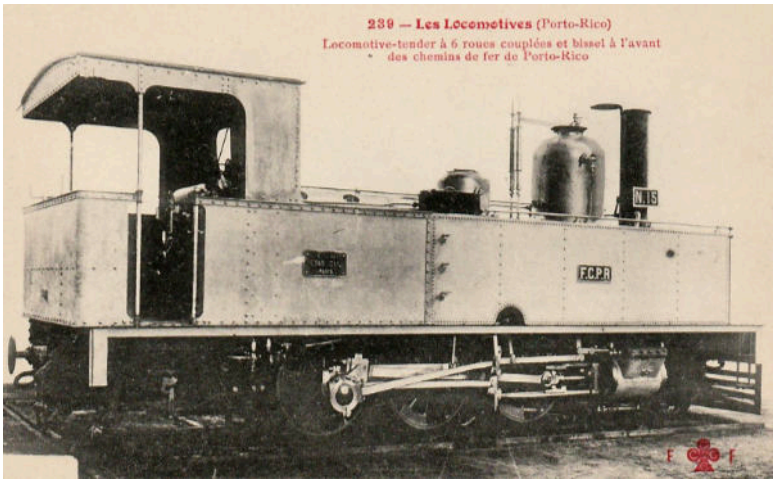
2-6-0T d/w 1000mm, cyls. 340x500mm, built by Cail in 1889

Ordered for *Societe d'entr. des colonies Espagnoles*. Not delivered, then sent to Puerto Rico RR.

1	w/n 2295	
2	w/n 2296	Restored for display at Henry Ford Museum in Dearborn, Michigan, but later returned to France in 1994 for the *Chemin de Fer de la Baie de Somme*.
3	w/n 2297	
4	w/n 2298	
5	w/n 2299	
6	w/n 2300	
7	w/n 2301	
8	w/n 2302	
9	w/n 2303	
10	w/n 2304	
11	w/n 2305	
12	w/n 2306	
13	w/n 2307	
14	w/n 2308	
15	w/n 2309	
16	w/n 2310	
17	w/n 2311	
18	w/n 2312	
19	w/n 2313	
20	w/n 2314	
21	w/n 2315	
22	w/n 2316	
23	w/n 2317	
24	w/n 2318	
25	w/n 2319	
26	w/n 2320	
27	w/n 2321	



Cail 2-6-0T no. **2**, presumably before shipment from the Cail works. Photo from the Henry Ford Museum via Charles Small's book [15].



A postcard showing one of the Cail locos as for Puerto Rico, no. **15** in this case.

No. **2** as it is nowadays, back in France and running at the *Chemin de Fer de la Baie de Somme*. An air-pump and turbo-generator have been added, when compared with the image above.

Notes from the *CF de la Baie de Somme* website, translated into English:

"Locomotive 2-6-0T N° **2** is both the oldest machine in the *CFBS* collection, and the one with the most unusual history. It is also the one which, for almost a century, has covered more distance… at sea than on rails!

Built in 1889 by the Cail company for the Panama Canal project promoted by Ferdinand de Lesseps, the locomotive crossed the Atlantic for the first time, from East to West, with five of its sisters.

After the failure of the digging of the Panama Canal by the French, the railway equipment from the site was transferred to Puerto Rico to build the island's railway network – which explains the "*FCPR*" plates - (*Ferro-Carriles de Puerto-Rico*) still visible on the sides of the machine. Second sea voyage! In 1898, Puerto Rico was invaded by the Americans, and the French locomotive was also Americanized: bell, large lantern, fuel oil burning, automatic couplings...

In 1929, the machine was recovered by Henry Ford for his museum in Dearborn, near Detroit, Michigan. Third cargo trip… The car tycoon has it restored according to the original plans.

Half a century later, the museum decides to accentuate the American character of the museum, and takes leave of the 2-6-0 Cail n° **2**. The machine was sold to a small local bank to adorn its head office, then resold a few years later to an American enthusiast, who was quickly looking for a new buyer.

Aware of the rarity of this machine and its exceptional interest in terms of technical heritage, the *CFBS* began a series of steps which led to the purchase of the locomotive.

December 1994 saw the N° **2** again reach the Atlantic, but this time for a crossing from West to East! She landed in Le Havre, then was transported to St-Valery-sur-Somme by road.

After several years of work and fitted with a new boiler, the Cail was put back into service on the occasion of the 2003 Steam Festival. it has finally travelled more kilometers on the rails than on the water!"

Another possibility

Rabbi Walter Rothschild has mentioned an apparently long-standing rumour that three Baldwin metre gauge 2-6-0s supplied to the French-owned *Chemin de Fer de Jaffa á Jérusalem* around 1890 had originally been ordered for a railway in Panama. These were BLW nos. 11011 to 11013. Unfortunately the relevant spec. sheet in volume 16 page 93 is one of those whose outer edges (including the topmost lines of text) are impossible to read, and thus there are no clues as to any previous orderers.

15.2.3 The Miraflores spillway and other 3' 0" gauge

Background

"NARROW-GAUGE ROAD.

A narrow-gauge railroad is used for transporting mixed concrete from the berm to the chamber cranes. The track system is shown on Plate 108 and the difference in elevation between the forebay and bottom of lock chambers is overcome by means of trestles with a grade of 2.5 per cent. The tracks are laid with 70-pound steel rails, which enables the locomotives to attain a greater rate of speed than would be safe on the light rail usually employed. The equipment consists of twelve 11½-ton Porter locomotives and 24 steel flat cars, all equipped with air; each car is large enough to hold two buckets of 64 cubic feet capacity. A train consists of two cars and each of the latter carries a bucket so placed that when alongside a berm crane the buckets may be filled from the corresponding mixers without moving the train. The trains alternate in going into the respective lock chambers and stop under the first chamber crane reached ; the latter places an empty bucket on one of the cars and picks up a loaded one from the same car; the train then moves to the next crane, where the operation of exchanging buckets is repeated, after which it returns on the up track to the mixing cranes with the two empty buckets." [ICC annual report 1909-1 0, pp163-4]

0-4-0ST d/w ?, cyls., built by Davenport in 1907

Ordered for Isthmian Canal Commission.

ICC **801**[1]	w/n 763	
ICC **802**[1]	w/n 764	It was transferred as Alaska Engineering Commission **6** in 1917 and became Alaska RR **6**. It was renumbered **1 'ERNEST L. PLUNKETT'** and put on display in October 1947.
ICC **803**[1]	w/n 765	Later reco 1435 mm: 6 AEC/ARR -> 1 ARR MON
ICC **804**[1]	w/n 766	

NB AC shows 802 and 803 both to Alaska: the former to the Alaska Eng. Commission as no. **6** in 1917, and the latter to the Alaska RR as no. **6**, rebuilt to standard gauge in 19030, and then renumbered, named and later put on display as above. These notes sound as though they have got a bit mixed up.

Comment from an Alaskan website:

Engine no. 802: 4 of them were built by Davenport Locomotive Works as a narrow gauge 0-4-0 ST in October 1907 at the cost of $3,163 each. They were numbered 801 to 804.

This locomotive (**802**) and other narrow gauge equipment were transferred from the Panama Canal to the Alaska Railroad Commission in 1917. The **802** became Alaska Engineering Commission No. **6** and was converted to standard guage in 1930 and renumbered to No. **1**. Engine **802** was one of 4 ordered to be used in the construction of the Miraflores Locks. There were at least a dozen or more other narrow gauge locomotives to be used at Gatun and Pedro Miguel. Incidentally there were also a few electric narrow gauge locomotives used only at Gatun cement plant. The French had about 12 half-meter gauge (aka Decauville) steam locomotives that they used in the actual excavation of parts of the canal.

All of the n.g.locomotives ordered by the ICC were confined to use in the construction of the three locks. They hauled cement from batching plants, in skips on flat cars to points where they could then be picked up and the cement used in the gigantic wall monoliths. They also hauled other material steel,for the gates, lumber for forms, etc. Most all of them were disposed of in about 1914.

None of the U.S. n g locomotives were used in the excavation of the channel in the lake section or in the cut. The Decauville locomotives were acquired by the U.S. from the French and were used at many different locations on small excavating jobs and small construction jobs, mostly to haul building materials. A few of them escaped destruction and were purchased by private people to be used in banana business, sugar business, and possibly mining ventures in Panama.

In 1994, Bob Yost volunteered to restore the locomotive because it was in very bad condition. It was removed from the pedestal and taken to the railroad shop in Anchorage. He then dismantled the locomotive completely down to the top of the rails! He spent many hours working on all parts of the locomotive. Some parts were built brand-new like the cab, a new water tank was built. He also installed new brasses and new bushings in all connecting and driving rods.

This work was all done on his own time with very little or no assistance from anyone else. Some tasks were given to various local machine shops and contractors who cooperated by donating their time, machines and materials.
Article by A.M. Bouche at https://www.alaskarails.org/historical/former/alumni/1.html

ICC **802** as later plinthed in Alaska.

Equipment for Miraflores Spillway.

Four 18-ton narrow gauge contractors' engines, for use on the spillway work at Miraflores, have arrived from the Davenport (Ia.) Locomotive Works. They were shipped in big cases and unloaded by the crane at Cristobal. Since the American occupation they are the only locomotives that have come to the Isthmus set up. Thirty-five 2-yard cars for use with the locomotives, and about a mile of 30-pound rails have also been delivered at the Miraflores work.

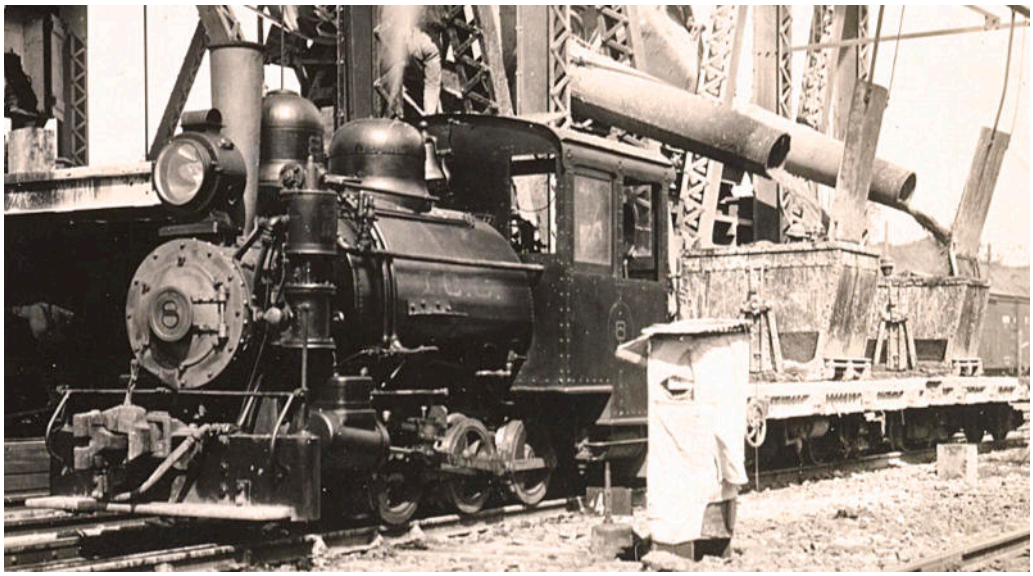
0-6-0ST d/w 24", cyls. 8x14", built by Porter in 1909 and 1910

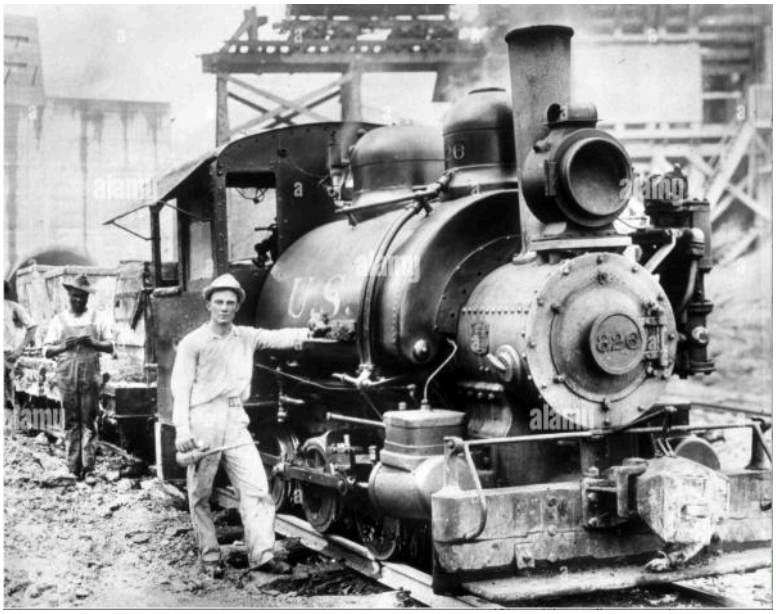
Ordered for ?

ICC **821**	w/n 4301	
ICC **822**	w/n 4302	
ICC **823**	w/n 4303	Seen in a photo working at the Pedro Miguel locks site.
ICC **824**	w/n 4304	
ICC **825**	w/n 4305	
ICC **826**	w/n 4306	
ICC **827**	w/n 4307	
ICC **828**	w/n 4308	
ICC **829**	w/n 4309	Copeland has this one as sold to the *FC Pacifico de Costa Rica*, as their no. **15**, but this might be a result of confusion with the 3' 6" gauge locos listed in the next section.
ICC **830**	w/n 4310	Copeland has this one as sold to the *FC Pacifico de Costa Rica*, as their no. **16**. However, another source says went to Alaska Eng. Commission first as no. **830**, and only later sold tto Costa Rica.
ICC **831**	w/n 4656	
ICC **832**	w/n 4657	
ICC **833**	w/n 4666	Later to Fraser Brothers Ltd., Valleyfield, Quebec, Canada.
ICC **834**	w/n 4668	Later to Fraser Brothers Ltd., Valleyfield, Quebec, Canada.

Six of them went to United Fruit Co., Bocas del Toro, Panama [2].

One of them went to *Central Azucarera de Bais*, Philippines, as their no. **4**.



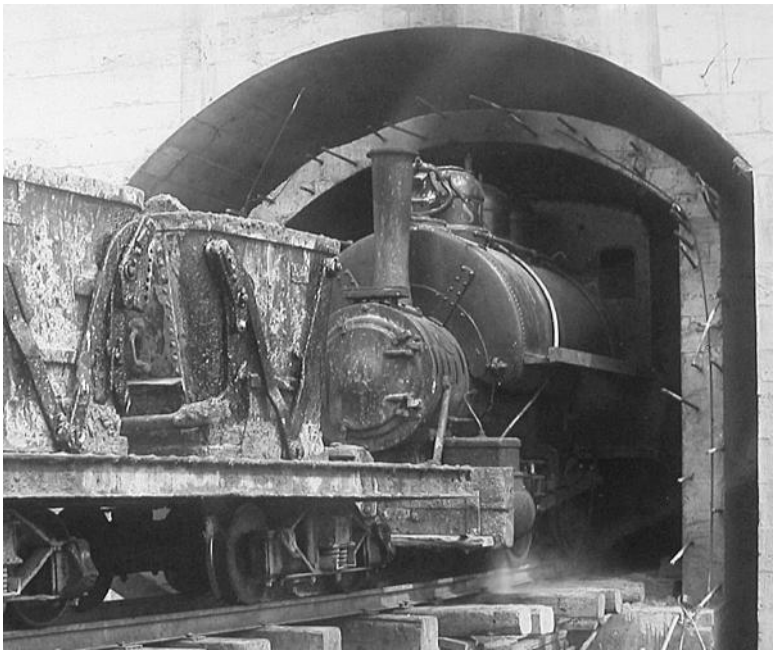


0-4-0ST d/w ?, cyls. ?, built by Vulcan Iron Works in 1908 and 1910

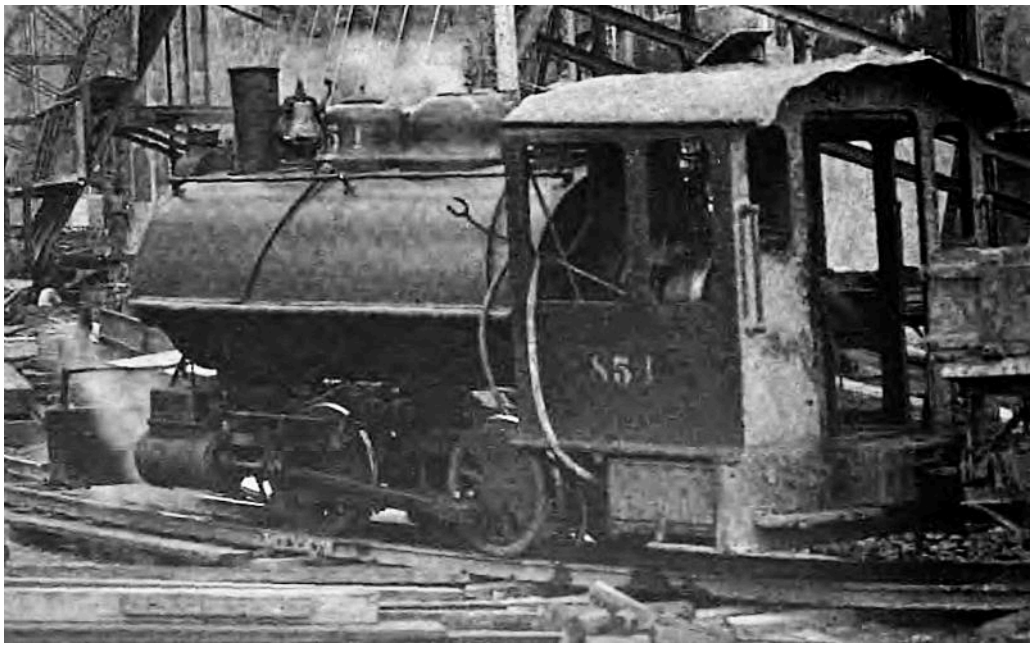
Ordered for ?

ICC **851**	w/n 1244	
ICC **852**	w/n 1245	
ICC **853**	w/n 1246	
ICC **854**	w/n 1247	Later to J.G.White Engr. Co. in 1927.
ICC **855**	w/n 1248	

Two of them later went to the *FCNCh*.



This photo of a small saddle tank loco at the Gatún spillway would appear to show one of these VIW engines, judging by the bell immediately abaft of the chimney.



VIW 0-4-0ST no. **854** seen within a set of lock chambers under construction.

15.2.4 The 3' 6" gauge in the Porto Bello stone quarries

Background

The Porto Bello stone quarries, from whence stone was brought for the canal construction, were about 25 Km. north east of Colón, along the northern or Caribbean coast of Panama.

0-6-0ST d/w 40", cyls. 15x20", built by Porter in 1908

Ordered for Isthmian Canal Commission with original numbers **1-10**. Copeland's Costa Rica list suggests that all were rebuilt as 2-6-0s in 1914, but source [2] suggests that sales of these engines had begun in 1913, and that two went to the *FC al Pacifico* in Costa Rica with the remainder going to the Northern Railway in that country.

ICC **871**	w/n 4217	Later to Costa Rica's *FC del Sur* (UFCo) no. **71**; later to the *FC Norte de Costa Rica* as no. **30**.
ICC **872**	w/n 4218	Later to Costa Rica's *FC del Sur* (UFCo) no. **72**; later to the *FC Norte de Costa Rica* as no. **31**.
ICC **873**	w/n 4219	Later to Costa Rica's *FC del Sur* (UFCo) no. **73**.
ICC **874**	w/n 4220	Later to Costa Rica's *FC del Sur* (UFCo) no. **74**.
ICC **875**	w/n 4221	Later to Costa Rica's *FC del Sur* (UFCo) no. **75**.
ICC **876**	w/n 4222	Later to Costa Rica's *FC del Sur* (UFCo) no. **76**; later to the *FC Norte de Costa Rica* as no. **32**.
ICC **877**	w/n 4223	Later to Costa Rica's *FC del Sur* (UFCo) no. **77**.
ICC **878**	w/n 4224	Later to Costa Rica's *FC del Sur* (UFCo) no. **78**.
ICC **879**	w/n 4225	Later to Costa Rica's *FC del Sur* (UFCo) no. **79**.
ICC **880**	w/n 4226	Later to Costa Rica's *FC del Sur* (UFCo) no. **80**.

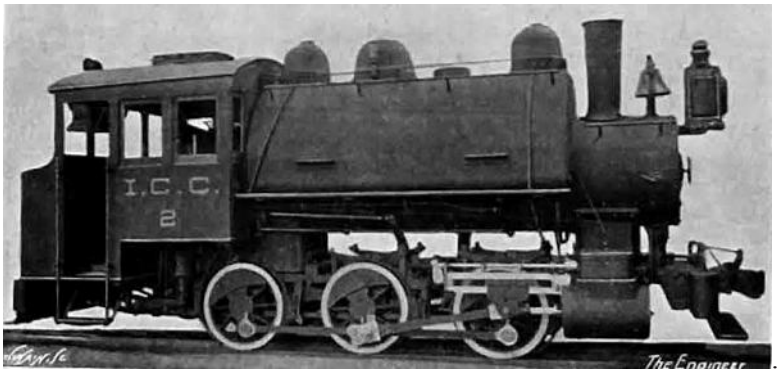
In 1913 the engines all became nos. **71-80** of the *FC del Sur de Costa Rica* (United Fruit Co.), eight of them later went on to the *FC Norte de Costa Rica*. Two eventually became nos. **15-16** of the *FC al Pacifico de Costa Rica*

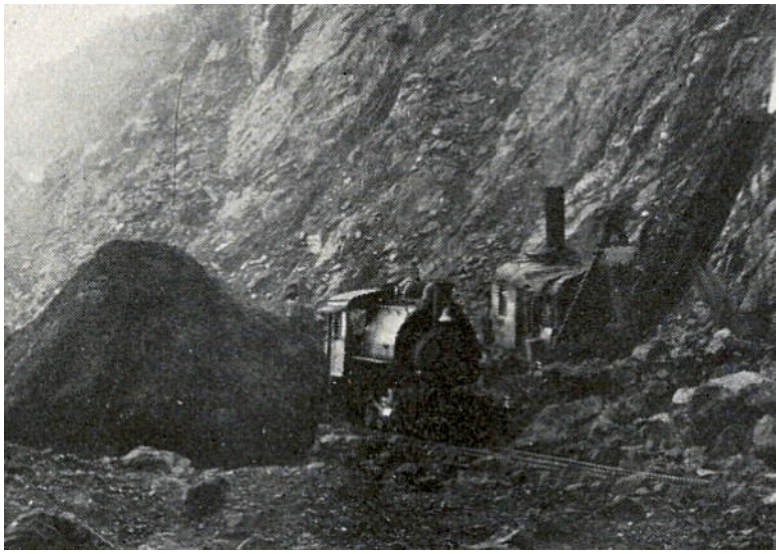
More Locomotives and Cars.

A contract to furnish ten 40-ton 6-wheel connected, saddle-tank locomotives for the work at Porto Bello has been awarded to H. J. Porter & Co., of Pittsburg, the lowest bidder. These engines are to be 3-foot, 6-inch gauge, with wheels 40 inches in diameter, cylinders 15 inches by 20 inches, tractive force 15,000 pounds, and boilers carrying 160 pounds pressure. They will operate from the quarry at Porto Bello to the crushers on a 2½ to 3 per cent grade, will run on a 20-degree construction track, and will haul about 600 yards of stone, weighing 2,900 pounds to a yard. They will be constructed along the latest designs for this class of engine, including an air brake rigging which will meet the interstate commerce regulations. Locomotives of this type are in general service in the States in similar classes of work.

A contract has also been let for fifty 6-yard, all metal dump cars, the lowest bidder being Vermile & Powers, of New York city. These cars are to be similar in construction to the 12-yard Oliver and Western dump cars now in use. The cars will be 15 feet long, 8 feet wide, equipped with Tower M. C. B. couplers and Westinghouse automatic air brakes. They will be of exceedingly strong construction, in order to stand the hard usage given cars on the Isthmus.

Bids have been asked for 200 dump cars similar in construction to the 12-yard Oliver and Western dump cars, now in service on the Isthmus.





Locomotives for Porto Bello.

Ten small locomotives for use in the stone quarries at Porto Bello arrived on the Isthmus last week and were loaded on barges, and have been towed to Porto Bello. They came from H. J. Porter & Co., of Pittsburg, and were sent to the Isthmus knocked down. They will be erected at Porto Bello. The locomotives are of the general type used in such service in the United States. They have a 3-foot 6-inch gauge, wheels 40 inches in diameter, cylinders 50 inches by 20 inches, and boilers carrying 160 pounds pressure. They will work from the quarry to the stone crusher, on a grade of from 2½ to 3 per cent on a 20-degree construction track. They are equipped with an air brake rigging. It is believed they will be in service by the middle of December.

15.3 Other railways in Panama

15.3.1 United Fruit Co., Northern Division at Changuinola

Later known as Chiriqui Land Co. Northern Division

Background

Gauge 3' 0" = 914 mm. Originally begun in 1906 to link Torres Point to Cedar Creek, about twelve miles, but gradually grew into a 250 mile network extending across the border into Costa Rica.

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

Ordered for ?

?	w/n ?
?	w/n ?

See also Porter 1894-5 of 1898 0-4-2T, d/w ?, cyls. 5x8", for Snyder Bananas, Mobile, Alabama, nos. **1-2**, later to UFCo of Bocas del Toro, Panama. Similarly no. 2015-6 and 2102 of 1899, nos. **3-5**,

The short length of Changuinola RR no. **6**, with the chimney hidden behind the gentleman on the right, the shape of the dome, the bunker behind the cab, and the seemingly almost flat cab roof, all suggest that this was a Porter tank loco.

2-8-0 d/w ?, cyls. 14x18", built by Porter in 1901

Ordered via S. H. Payne & Son for United Fruit Co., Bocas del Toro, Panama.

?	w/n 2265

2-6-0 d/w 33", cyls. 10x14", built by Porter in 1904, 1906, 1907, 1909, 1911, 1912

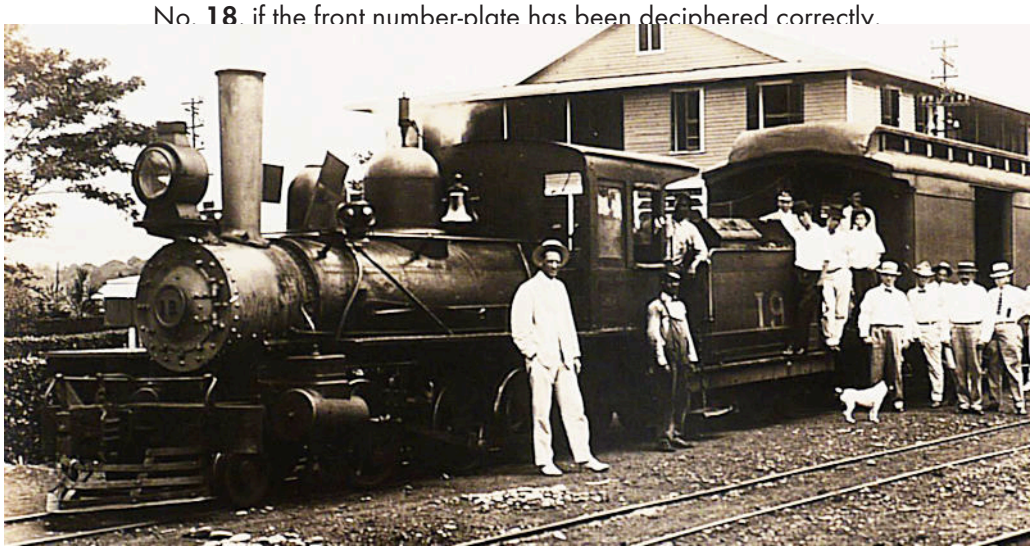
Ordered for ? Source [3] implies that these may have been of two different varieties, though all with 10x14" cylinders.

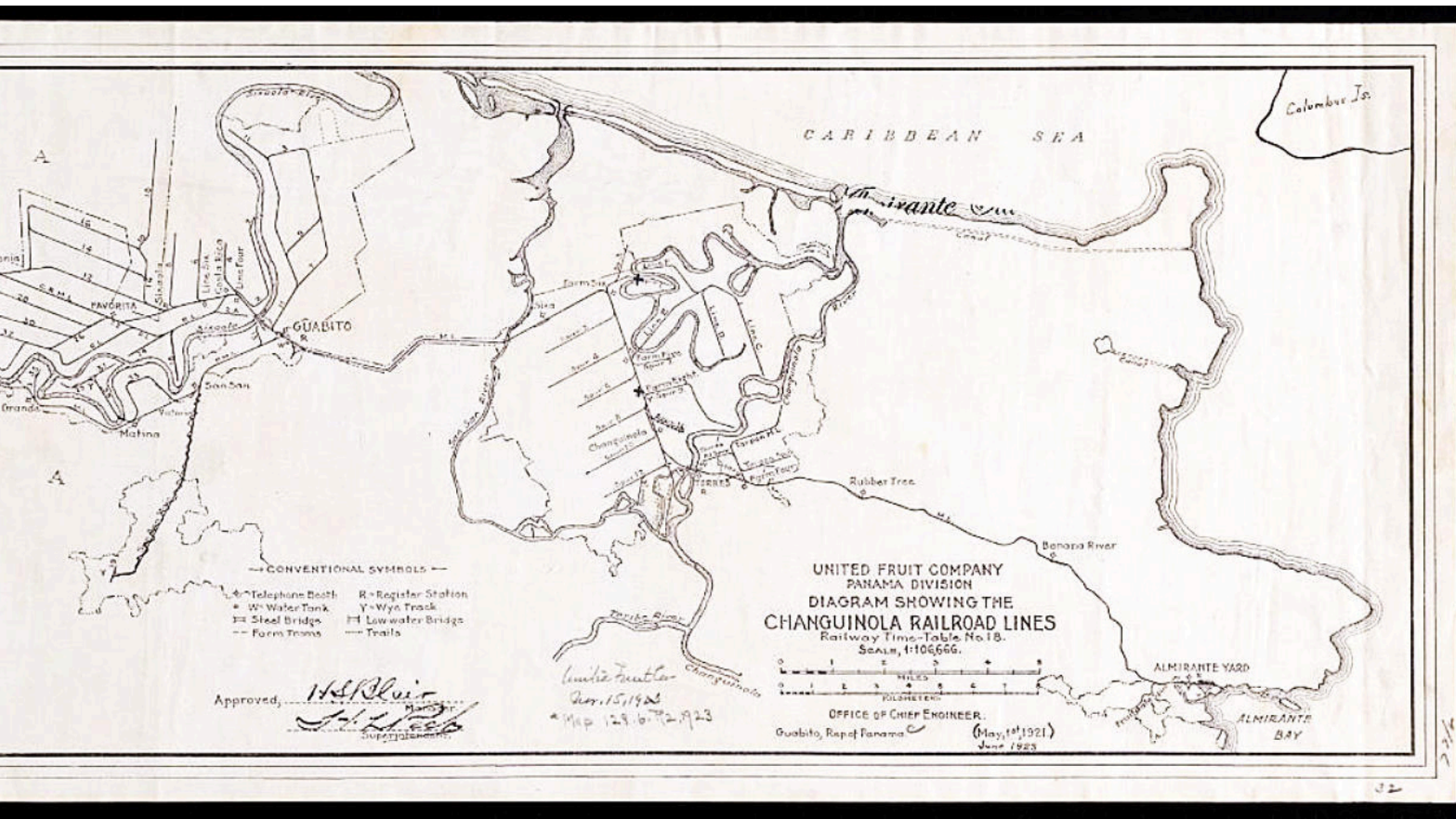
9	w/n 3054	1904	Def. for UFCo. Unknown location.
10	w/n 3086		For UFCo, Chanquinda (prob. Chanquinola.)
11	w/n 3433	1906	Def. for UFCo Changuinola RR
12	w/n 3434		Def. for UFCo Changuinola RR
14	w/n 3830	1907	Def. for UFCo.
15	w/n 3831		Def. for UFCo.

16	w/n 3980		Def. for UFCo Changuinola RR
17	w/n 3981		Def. for UFCo Changuinola RR
18	w/n 4087		Def. for UFCo.
19	w/n 4088		Def. for UFCo.
20	w/n 4089		Def. for UFCo.
21	w/n 4090		Def. for UFCo.
23	w/n 4232	1908	Def. for UFCo.
24	w/n 4233		Def. for UFCo.
25	w/n 4296	1909	Def. for UFCo. Panama
26	w/n 4297		Def. for UFCo. Panama
27	w/n 4368		Def. for UFCo Changuinola RR
28	w/n 4369		Def. for UFCo Changuinola RR
33?	w/n 4840		Most lists say built for Guatemala but Copeland's Panama list has it down for here.
?	w/n 4841		Most lists say built for Guatemala but Copeland's Panama list has it down for here.
?	w/n 5239	1912	Def. for UFCo. via Wonham.
?	w/n 5240		Def. for UFCo. via Wonham.
?	w/n 5241		Def. for UFCo. via Wonham.

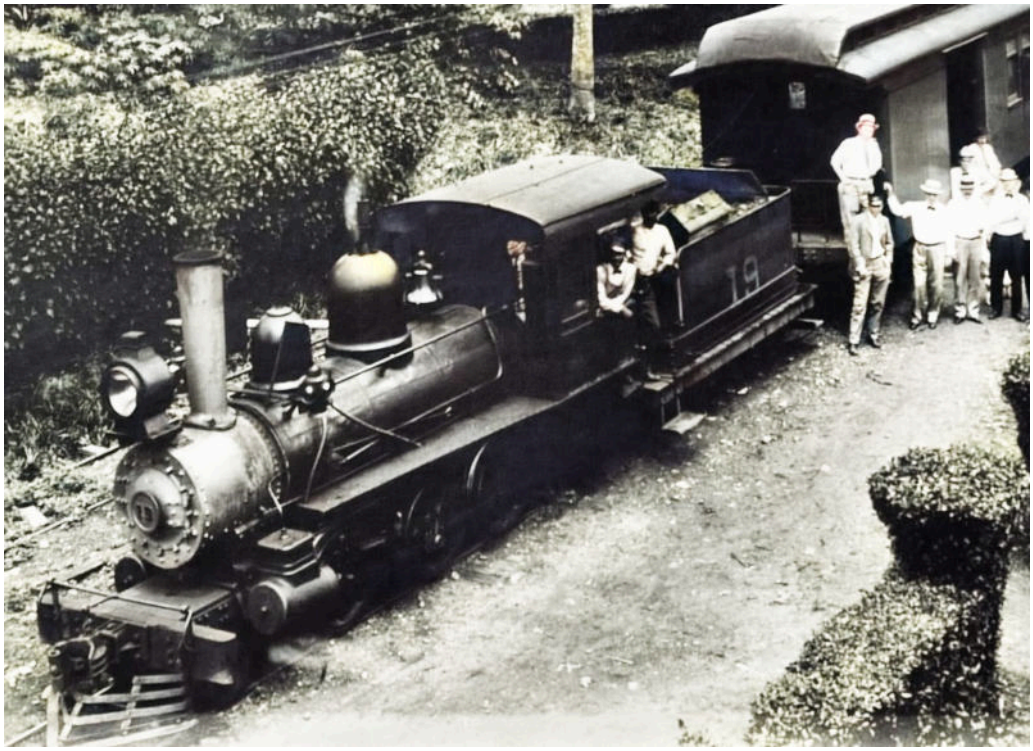
Possibly also Porter nos. 4837, 4838 and 4839, according to Copeland. See below.

No. **18**, if the front number-plate has been deciphered correctly.

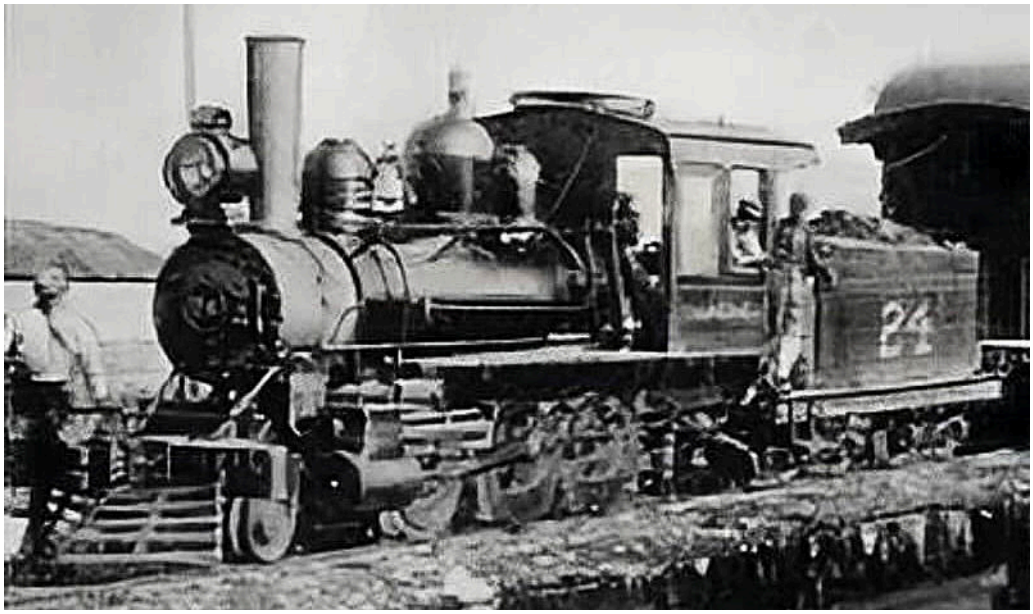




No. **19**, seemingly at the head of a special passenger train, and a similar scene from a higher viewpoint, though at a different location, can be seen below.



A colourised view of no. **24**. You will note that this loco, unlike nos. **18** and **19** seen above, has a rear sand-dome.



A United Fruit Co. photo showing a passenger train supposedly at a location named Margarita. This might not have been in Panama, for the photo collection covers all UFCo sites in Central America. The loco bears the number **25**.

2-6-0 d/w 36", cyls. 12x16", built by Porter in 1914

1 then ? **36**	w/n 5513	1914	Def. for UFCo. Changuinola RR. Later to Chiriqui Land Co. no. **45**.
35	w/n 5514		Def. for UFCo. Changuinola RR. Later to Chiriqui Land Co. no. **46,** and possibly on to *Cía Agricola*, Guatemala as no. **46**. Later to Pine Creek RR in New Jersey 1961 as their no. **4**. Then to NJ Museum of Transportation.
38	w/n 5515		Def. for UFCo. Changuinola RR. Later to Chiriqui Land Co. no. **47**.
39	w/n 5516		Def. for UFCo. Changuinola RR. Later to Chiriqui Land Co. no. **48**.

2-6-0 d/w 40", cyls. 13x20", built by Baldwin in 1908

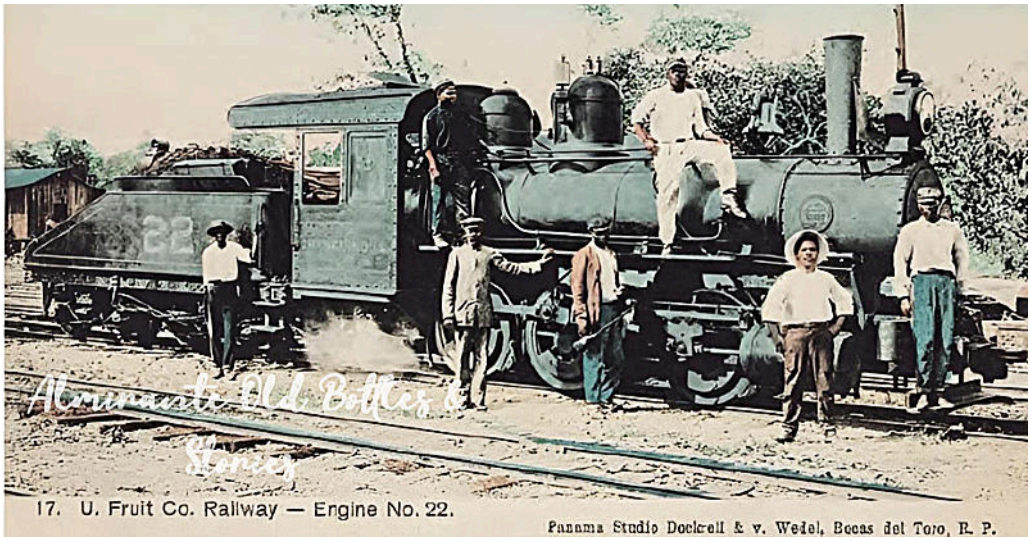
Ordered for ?	Copeland has this as an 0-6-0. He says probably not delivered here.	
22[1]	w/n 32551	Later went to Central Union in Cuba, as their no. **3**.

0-6-0 d/w 40", cyls. 13x20", built by Baldwin in 1908

Ordered for ?

22[2] w/n 32737

Changuinola no. **22**, a Baldwin 0-6-0 no. 32737. Hi-res versions of this image (BLW negative 02606) can be obtained from the Railroad Museum of Pennsylvania.



No. **22** seen from the same angle as the previous photo, but during its active life and recorded on a colourised postcard.

4-4-0 d/w 42", cyls. 10x16", built by Porter in 1911

Ordered for UFCo Changuinola RR

'CHANGUINOLA 2' w/n 4837

2-6-0 d/w ?, cyls. 8x12", built by Porter in 1911

Ordered for UFCo Changuinola RR

3 w/n 4838

4 w/n 4839

2-6-0 d/w 36", cyls. 12x16"", built by Porter in 1920

Ordered for *Cia. Agricola de Panama*. This may have been merely a division of United Fruit.

63 w/n 6580 Sold 1957 to Cía. Agricola de Guatemala, their no. **17**.

64 w/n 6581 Sold 1957 to Cía. Agricola de Guatemala, their no. **8**.

65 w/n 6582 Sold 1957 to Cía. Agricola de Guatemala, their no. **9**.

0-4-0 d/w 22", cyls. 6x10?", built by Porter in 1922

Ordered for UFCo. Changuinola RR. Oil-burners, 4wh. tender.

71 w/n 6709

72 w/n 6710

73 w/n 6711

0-6-0ST d/w 24", cyls. 8x14", built by Porter in 1909 and 1910

Ordered for ICC.

?	w/n ?
?	w/n ?
?	w/n ?
?	w/n ?
?	w/n ?
?	w/n ?

The fleet in 1922

The US Dept. of Commerce report [4] included the following list of locomotives:

"MOTIVE POWER AND ROLLING STOCK

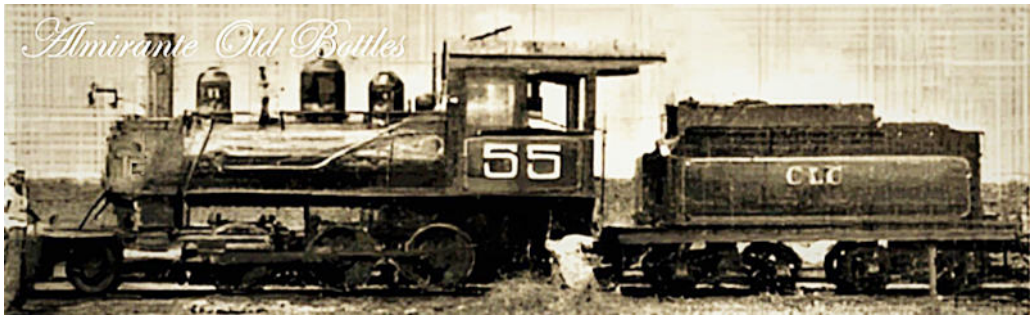
Locomotives, 1913, 33; 1922, 36, made up as follows:	**Comments added here.**
1 18-ton 8-wheel passenger, cylinders 10 by 16 inches, type 4-4-0.	No. **2**, Porter 4837 of 1911.
1 10-ton mogul, cylinders 8 by 12 inches, type 2-6-0.	One of nos. **3-4**, Porter 4838-9 of 1911.
8 15-ton mogul, cylinders 10 by 14 inches, type 2-6-0.	Eight of the 10x14" moguls listed above.
1 22-ton Baldwin 6-wheel switch, cylinders 13 by 20 inches, type 0-6-0.	No. **22**, Baldwin 32737 of 1908.
13 18-ton mogul, cylinders 10 by 14 inches, type 2-6-0.	The remainder of the 10x14" moguls listed.
6 18-ton mogul, cylinders 10 by 16 inches, type 2-6-0.	?
5 22-ton mogul, cylinders 12 by 16 inches, type 2-6-0.	Five of the seven 12x16" moguls listed.
1 8-ton tram, cylinders 6 by 10 inches, type 0-6-0.	?

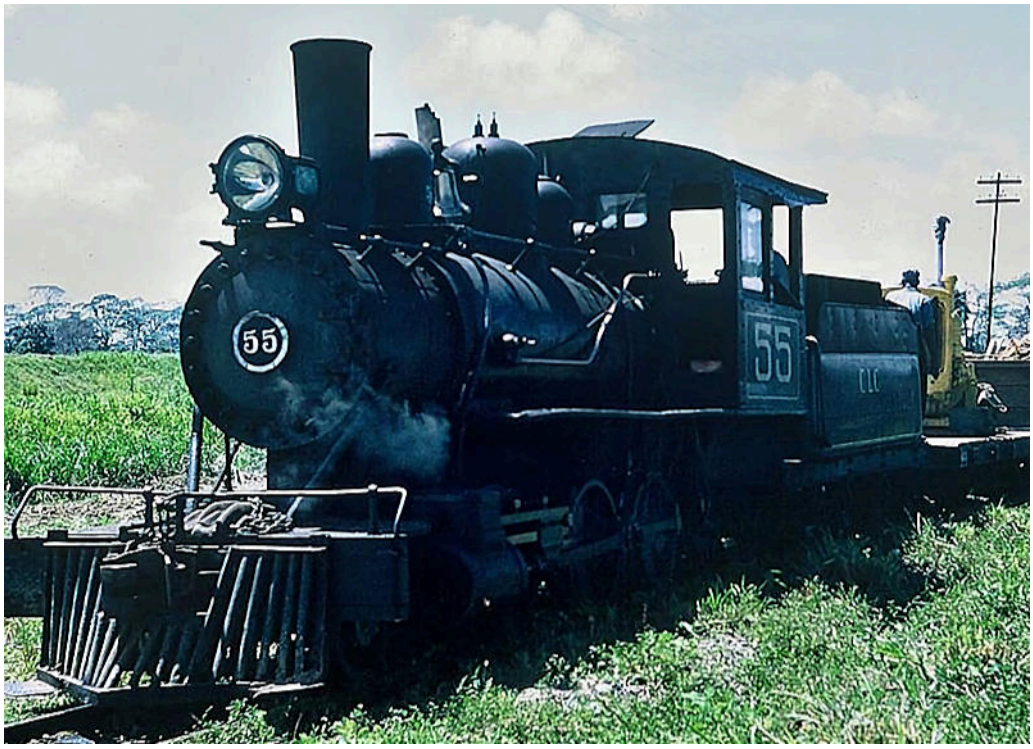
All locomotives with the exception of the 22-ton Baldwin, 6-wheel switcher, are Porter locomotives.

Miscellaneous railroad cars, 1914, 548; 1922, 547."

The United Fruit Co. yard at Guabito in Panama during the 1920s. The locomotives bear running numbers from **51** to **55**, suggesting not only that this was a new batch photographed for publicity purposes, but also that the UFCo loco list above is seriously incomplete.

Not a good quality image, but n vertheless of interest as showing a line of Porter locomotives, probably about to set off to collect loads of bananas.





0-4-0T d/w ?, cyls. ?, built by Bell in ?

Ordered for ?

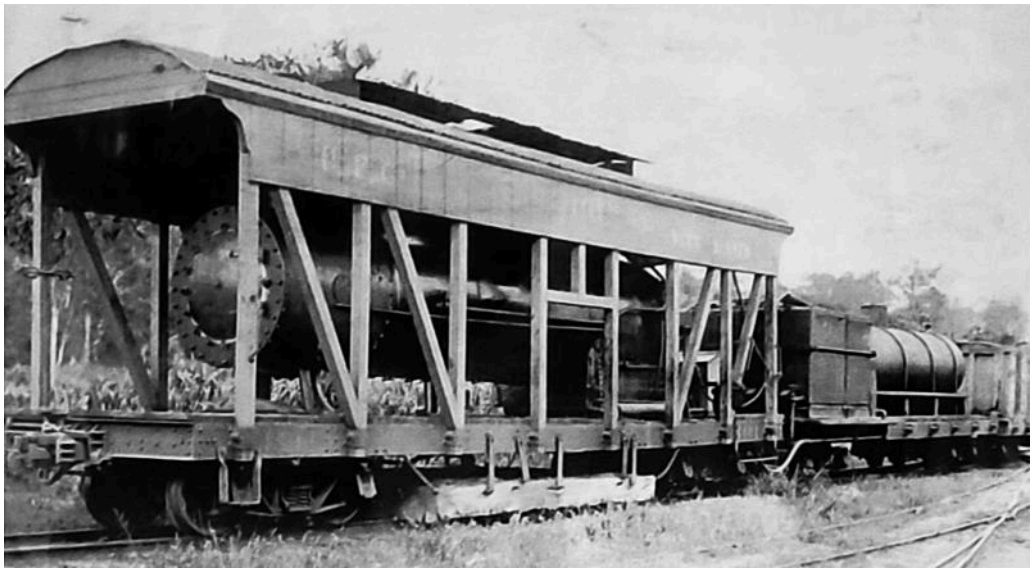
Number of locos unknown.

A UFCo photo showing a Bell geared loco, presumably on one of the company's rail systems.

Another photo of a Bell at Changuinola, and showing how small these locos were in contrast to the boxcars used to transport bananas.

Another weed-burner

Weed-burners crop up in several of these files covering tropical railway systems. They were used to keep fast-growing vegetation under control in the days before the development of modern chemical methods. Typically an old locomotive boiler was mounted on a bogie wagon, its steam warming and pumping oil to burners down at rail level whilst it was slowly pushed or pulled along by a locomotive.



This weed-burner, seen on the UFCo's Changuinola system in 1921, might well have been home-made, but a close look at the smokebox reveals what appears to be a Baldwin works-plate, and it probably utilises an old loco boiler.

15.3.2 *La Compañía Agrícola de Panama*

Background

This was at Bocas del Toro, the location of United Fruit, and the high running numbers fit well into their fleet. Was this merely an accounting separation?

2-6-0 d/w 36", cyls. 12x16", built by Porter in 1920

Ordered for *Cía. Agricola de Panama*. See previous page.

63	w/n 6580	Later to *Cía. Agricola de Guatemala* in 1957 as no. **17**, possibly with d/w 40½"; then to Gilmore Car Museum in 1965, now at LaPorte County Historical Steam Society and still needs much work.
64	w/n 6581	Later to *Cía. Agricola de Guatemala* in 1957 as no. **8**, possibly with d/w 40½"
65	w/n 6582	Later to *Cía. Agricola de Guatemala* in 1957 as no. **9**, possibly with d/w 40½"

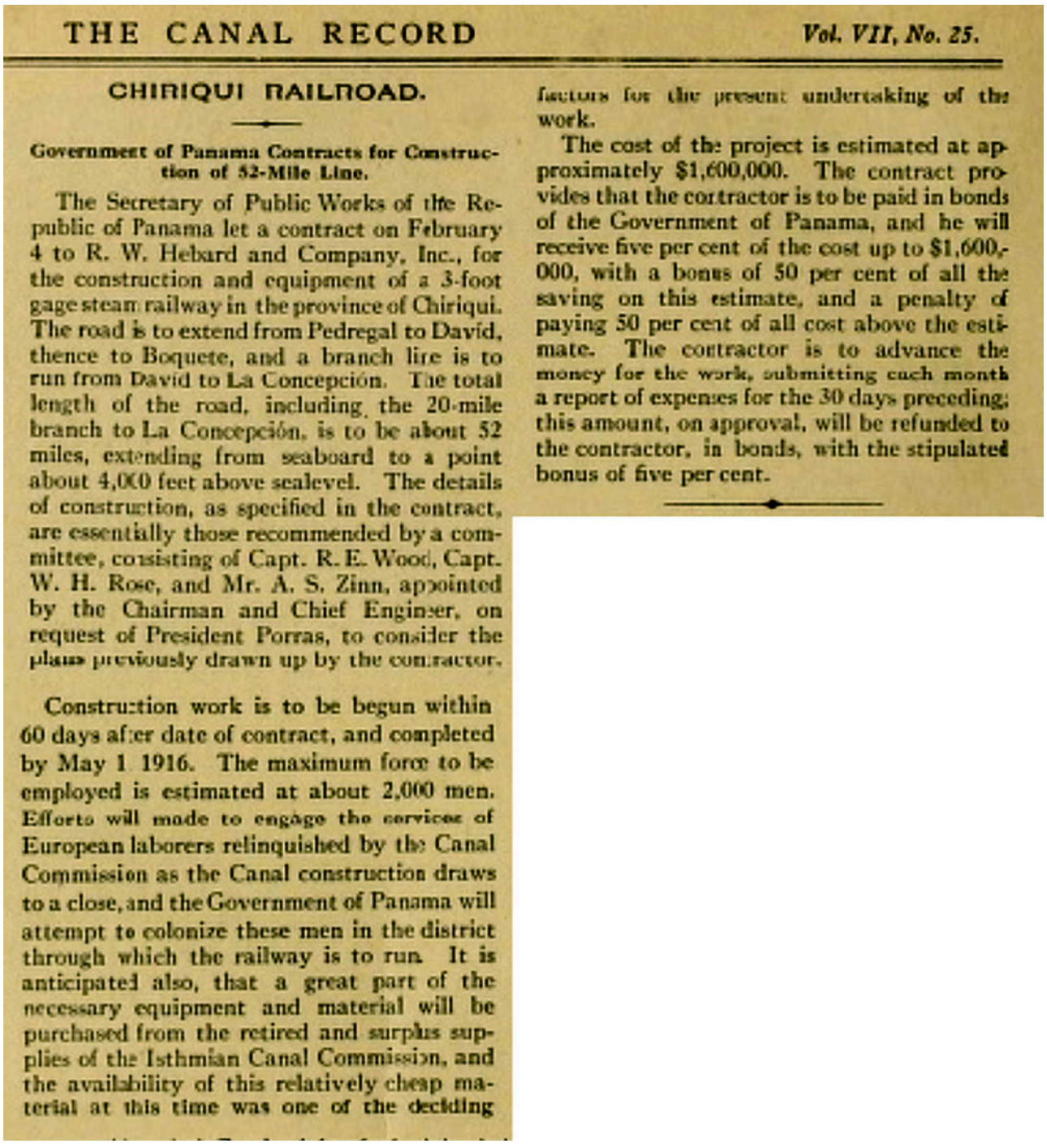
15.3.3 *El Ferrocarril Nacional de Chiriqui*

Background

Gauge 3' 0" or 914mm. This was in the far west of the country. Construction report in PCR vol. 8 p14, August 1914.
Four lines built then:

Ciudad David - Pedregal, 6,5 Kilometres, opened at the end of 1916
Ciudad David - La Concepción 29 Kilometres, opened in February 1916
Ciudad David - Boquete 45,1 Kilometres, opened on 15th April 1916
Dolega - Potrerillos 12,1 Kilometres, opened on 15th April 1916 [5]

FNC operated both passenger and freight service between LaConcepcion and Puerto Armuelles from 1924, and freight service between David and Pedregal on the Pacific. There had also been a line north of David to Boquete, and several branches. In 1923 the total route mileage was 57 but this will have grown later when the western line to La Concepcion was extended south-westward to the coast at Puerto Armuelles.
Effectively became national property in 1945.
There was a link to the FC del Sur in neighbouring Costa Rica, though with a change of gauge.



THE CANAL RECORD Vol. VII, No. 25.

CHIRIQUI RAILROAD.

Government of Panama Contracts for Construction of 52-Mile Line.

The Secretary of Public Works of the Republic of Panama let a contract on February 4 to R. W. Hebard and Company, Inc., for the construction and equipment of a 3-foot gage steam railway in the province of Chiriqui. The road is to extend from Pedregal to David, thence to Boquete, and a branch line is to run from David to La Concepción. The total length of the road, including the 20-mile branch to La Concepción, is to be about 52 miles, extending from seaboard to a point about 4,000 feet above sealevel. The details of construction, as specified in the contract, are essentially those recommended by a committee, consisting of Capt. R. E. Wood, Capt. W. H. Rose, and Mr. A. S. Zinn, appointed by the Chairman and Chief Engineer, on request of President Porras, to consider the plans previously drawn up by the contractor.

Construction work is to be begun within 60 days after date of contract, and completed by May 1 1916. The maximum force to be employed is estimated at about 2,000 men. Efforts will made to engage the services of European laborers relinquished by the Canal Commission as the Canal construction draws to a close, and the Government of Panama will attempt to colonize these men in the district through which the railway is to run. It is anticipated also, that a great part of the necessary equipment and material will be purchased from the retired and surplus supplies of the Isthmian Canal Commission, and the availability of this relatively cheap material at this time was one of the deciding factors for the present undertaking of the work.

The cost of the project is estimated at approximately $1,600,000. The contract provides that the contractor is to be paid in bonds of the Government of Panama, and he will receive five per cent of the cost up to $1,600,000, with a bonus of 50 per cent of all the saving on this estimate, and a penalty of paying 50 per cent of all cost above the estimate. The contractor is to advance the money for the work, submitting each month a report of expenses for the 30 days preceding; this amount, on approval, will be refunded to the contractor, in bonds, with the stipulated bonus of five per cent.

WORK ON CHIRIQUI RAILROAD.

Grading Completed for a Distance of Seven Miles —Track Laying to Start this Month.

Grading on the new railroad in the province of Chiriqui has been completed for a distance of about seven miles, four miles between the port of Pedregal and the city of David, and three miles on the La Concepción branch of the road. This branch line, extending from David to the village of La Concepción, a distance of about 18 miles, will be the first to be completed.

About 25,000 Oregon pine creosoted ties have been delivered to date; these cost, laid down, about $1 each. The contractors, R. W. Hebard and Company, are preparing specifications and conditions under which native ties, delivered at any point on the line, will be purchased. It is anticipated that 25,000 native hardwood ties can be obtained locally. The contractors are purchasing from The Panama Canal all the old 70-pound rail in good condition that can be spared, in addition to a miscellaneous lot of other equipment, including two small Porter locomotives, used in the construction of the Canal locks. Most of this equipment is to be used in the railroad construction work, and a part of it, namely, a number of dump and flat cars, and piledrivers is now undergoing repairs at the Balboa shops.

The force at present employed on the grading work consists of 25 gold, and 200 silver employes, and is being gradually increased with the expansion of operations. An office building and storehouse have been erected, and barracks are being built for the silver employes, all of whom will be housed and furnished free medical attendance. A mess will be maintained for the gold employes. There will be no commissary; all supplies are purchased from local dealers in David.

The most difficult piece of construction on the David-Boquete line will be the descent into the Boquete valley, through which flows the Caldera River. This valley is a deep gash in the mountains, and the descent into it is very abrupt. When the wagon road was built into the valley, it was constructed on so steep a grade as two require two pairs of oxen to pull an ordinary cartload of freight up the incline. The contractors have planned to excavate the track bed along the face of the cliff getting to the floor of the valley on a 5-per cent grade. The terminus of the Boquete road will be on the south bank of the Caldera River, near one end of the cable bridge that furnishes a means of communication to the Panamanian post-office at Lino, and the coffee plantations of the Boquete highlands.

The European war has as yet placed no difficulties in the way of continued construction of the Chiriqui road, and it will be proceeded with along the lines originally planned. Rail is being forwarded by each steamer, and it is intended to start track laying at the port of Pedregal in the latter part of September, and lay a line to the site of the first steel bridge at the Cristobal River, a distance of eight miles. The contractors calculate on being able to work 1,000 laborers during the next dry season.

Later the route west to La Concepción was extended further and then south, eventually reaching the coast at Puerto Arnouelles.

2-8-0 d/w 42", cyls. 18x24", built by ALCo in 1915

Ordered for Chiriqui railway via W. R. Grace. The caption to a photo of the railway's workshops in the Methodist archives at http://catalog.gcah.org/omeka/ mentions that there were only two engines at the time. The date is unknown, but it does imply that the ex-ICC saddle tanks mentioned immediately below arrived a little later.

1 w/n 55028

2 w/n 55029

0-4-0ST d/w ?, cyls. ?, built by VIW in 1908 or 1910

Ordered for the ICC as one of their **851-3** or **855**.

? w/n 1244-5 or 1446 or 1448

? w/n 1244-5 or 1446 or 1448

The caption on this image read "Mid-week passenger train on the Chiriqui National Railroad of Panama". It was found in the Methodist digital photo archive, vol. 04 p133, at http://catalog.gcah.org/omeka/items/show/44969 The loco seems to have acquired a tender.

The fleet in 1923

The extract reproduced from the 1925 US report confirms that there were two of the ex ICC saddle tank locos, but it looks as though only one was in use in 1922.

MOTIVE POWER AND ROLLING STOCK

A comparison of the rolling stock of the Chiriqui Railway for 1916 and 1922 is as follows:

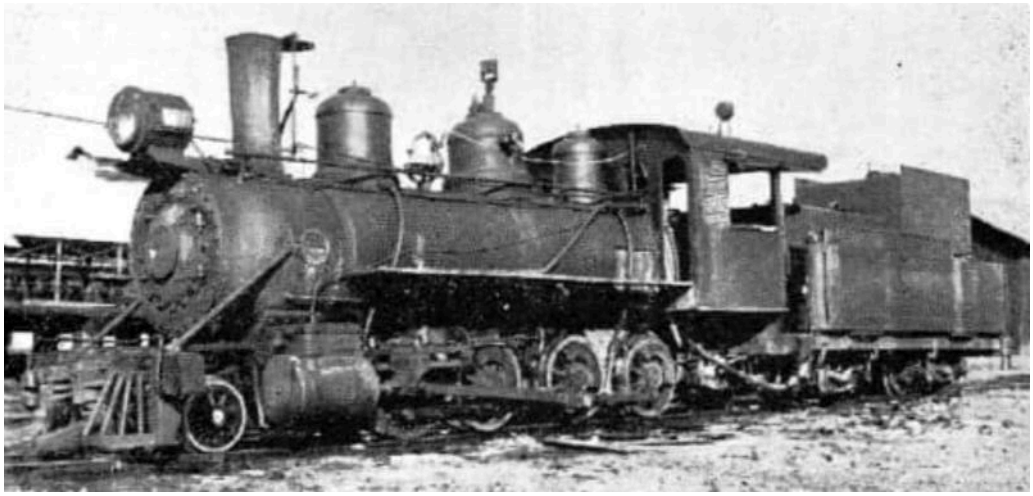
1916	1922
LOCOMOTIVES	LOCOMOTIVES
2 18 by 24 consolidation-type locomotives, 62½ tons capacity.	2 four-wheeled 18 by 24 consolidation-type locomotives, weighing 121,000 pounds, weight of tender 76,700 pounds, 100 tons capacity.
2 used Panama Canal locomotives, 18 tons capacity, with 10 by 16 inch cylinders of saddle-tank type.	1 saddle-tank switch engine with tank attachment, 18 tons capacity.

Page 144 of the 1925 US report by W. Rodney Long included the above table of steam locomotives, as well as a number of IC-engined railcars.

2-8-0 d/w 36", cyls. 16x20", built by Baldwin in 1904

Ordered for the United Fruit Co. Banes Railway as their no. **12**? BLW class 10-26E no. 314. Spec. is in vol. 26 p184.

3 w/n 23786

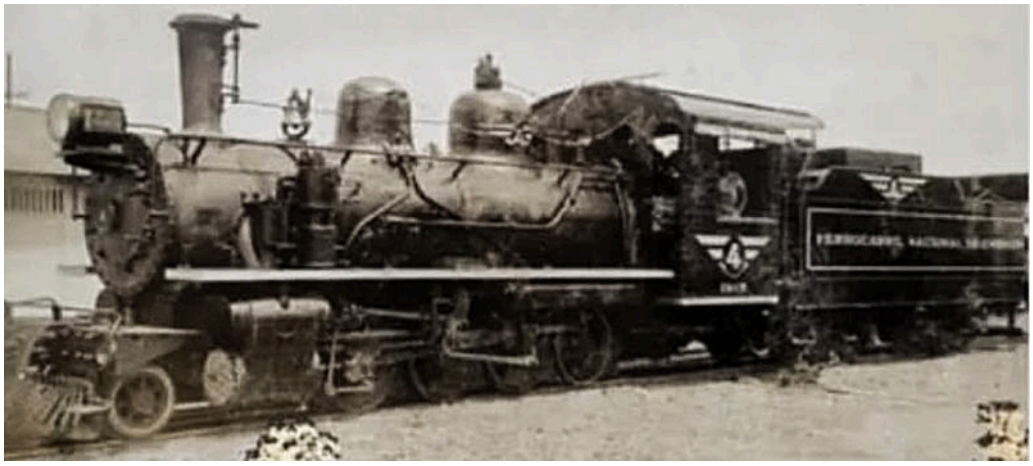


This engine might well be *FC de Chiriqui* no. **3**, but that needs to be confirmed.

2-8-0 d/w 38", cyls. 16x20", built by ALCo in 1936

Ordered for *FC Nacional de Chiriqui.*

4 w/n 68727



No. **4** was clearly an updated ALCo version of no. **3**, with piston valves instead of slide valves and almost certainly oil-fired.

Another image from the Methodist photo archive page mentioned above, and with the same photo caption. Date unknown but suggested as between 1900 and 1930. Precise identity of the loco is also unknown but it was probably either no. **1** or no. **2**.

The fleet in 1954

Apparently there were six steam locos at this time [5]. In 1970 these were still on the roster but rarely used [5].

Two views of the surviving plinthed loco from this railway. Its precise identity is unknown, though it does carry the number **1** on the back of the tender and could possibly be that particular ALCo 2-8-0.

15.3.4 The Chiriqui Land Co.

Background

Gauge 3' 0"= 914 mm. This company was apparently owned by the United Fruit Co. and seems to have built agricultural extensions to the *FC Nacional de Chiriqui*.

Two divisions:

Lineas del Sur.

It apparently reached Puerto Armuelles before the *FCN de Chiriqui*. Maximum 165 km. of route in the 1920s. Direct links to the *FCNC* at Puerto Armouelles, Progreso and La Concepcion.

Closed finally during 1980s.

Engines **1-6** might well have been steam, but so far nothing is known of them. Copeland say nos. **3** and **4** were steam, with the latter being by Baldwin.

1	w/n ?
2	w/n ?
3	w/n ?
4	w/n ?
5	w/n ?
6	w/n ?

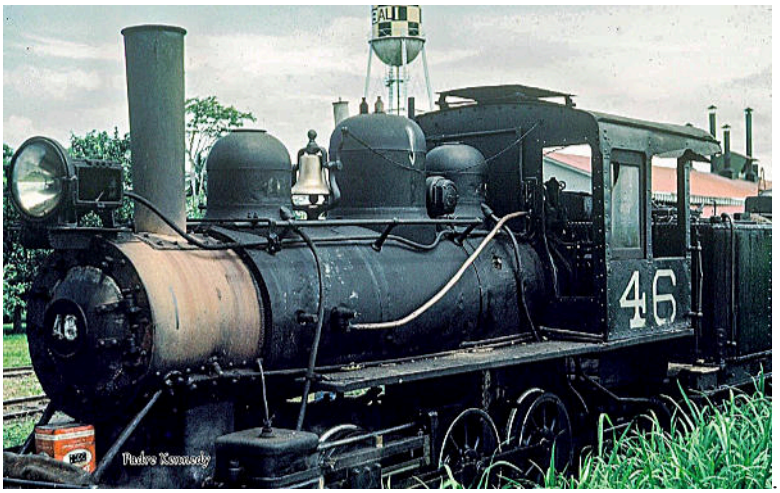
Locos numbered **7** and upward were all diesels.

Lineas del Norte

Based around Almirante. Not clear how this related to the United Fruit Co. network listed earlier, but they may well have been synonimous at least for a period.

Owned one steam loco in 1951, when there were 142 km. of route, including into Costa Rica. Closed 2008.

Chiriqui Land Co. no. **46** was Porter 2-6-0 no. 5514 of 1914. Sold 1961 to W. H. Morrison of Freehold, NJ, and then donated to NJ Museum of Transportation in 1969.



15.3.5 The Nombre de Dios railway

Background

Gauge 3' 0". Built initially during the 1st World War to link the Hyatt Panama Manganese Co. to a beach three miles away. Closed when manganese prices fell after the armistice.

New concession granted 1923 for a thirty mile line. Source [4] reported that eighteen miles had been completed.

15.3.6 Panama American Lumber Development Co.

Background

Three to four miles of narrow gauge in Rio Congo area of Panamá province.

0-4-4-0T Climax d/w ?, cyls. ? built by Climax in ?

Ordered for ? Reported in [4] as awaited in 1923 or so.
? w/n ?

15.3.7 Panama Sugar Co.

Background

Fourteen miles of narrow gauge around Progreso in Chiriqui province. This may eventually have been joined to the *FCN de Chiriqui* extension to Puerto Armouelles.

15.3.8 Mining for gold

Background

Rob Dickinson's *International Steam* website reports that "There are survivors at Cana, in the Darien region about 20km from the border with Columbia. A British Company built a 700/750mm line from a port in Columbia to the site of pre-Columbian and Spanish gold mines around 1900. The site was abandoned in 1907."

The site was that of the Espíritu Santo de la Cana gold mine, worked until 1907 by the Darién Gold Mining Co. (*Cía. Minera del Darién*), an Anglo-French concern.

There would appear to be two small German-built narrow gauge tank locos here, gently subsiding into the jungle. One might be an O&K, whilst the other might possibly be by Krauss.

Two photos from Rob Dickinson's International Steam website at https://www.internationalsteam.co.uk/trains/panama03.htm
The picture above would seem to show a small O&K, whilst that illustrated below might well have been by Krauss.

Other mines

Stewart Redwood's recent paper [3] tells of a surprising number of mines, largely for gold. In the circumstances there may well have been more users of locomotives.

"The Panama City Directory of 1898 gives a snapshot of the mining industry near the end of the Colombian period (Posada, 1898). It lists 444 mine titles granted between 1887 and 1898. Of these, 369 were for gold, both alluvial and lode, four were for silver, three were for copper, one was for mercury, one was for gold-silver-lead, and 66 were for

manganese. Fifty-eight titles were registered in the name of companies, and the rest were in the name of one or more individuals. Mining companies working in Panama in the late 19th century included the Compañia Minera del Darién of Bogota at Cana; the Darien Gold Mining Company of London at Cana (1887-1914); the Santiago Gold Mining Company; the Colombian Quartz Mining Company; the Caribbean Manganese Company; The Veraguas Mining Company Limited; La Plata Mining Company Ltd. of London in Panama District (1880s); and H. Rothwell M.E. & Company of New York, owner of claims to the Santa María, Santa Catarina and El Capitán gold vein mines near Portobello (1902) (Posada, 1898; Fischer, 1975).

The copper mines were located in the northern Azuero peninsula (Herrera Province) at Río Tinto, Ocú; Don Juan, Las Minas; and El Guácimo, Pesé (Posada, 1898). The gold-silver-lead mine was in the same district at El Gallo, Las Minas. The mercury vein mine was at Porvenir, Gorgona. Apart from mining of a small amount of high grade copper ore at El Guácimo, in the 1950s, nothing else in known about these other small mines.

Following the Thousand Day Civil War of 1898-1902, which ravaged Panama and Colombia, the Republic of Panama was created in 1903 on independence from Colombia, and the Panama Canal was built by the U.S. government from 1904 to 1914. The old Antioquian mining code of 1864, which was made law for the whole of Colombia from 1887 (Fischer, 1975), was replaced by a new Panamanian mining code in 1917 and led to a boom in claim staking. English companies continued gold mining at Cana until 1912, followed by a Panamanian company until 1926, and in Veraguas until about 1936. The most important company in this period was the Panama Corporation Ltd. of London, managed by chairman Duncan Elliott Alves, and counted among its directors were the Earl of Cavan and Lord Melchett. The company was active from 1925-1932 with large exploration concessions in Darien, Rodriguez (west of the Canal Zone), Veraguas, Ocú, Chiriqui and Bastimiento (Bocas del Toro) (Sheridan, 1926; Riddell, 1927; Low, 1931; Norton, 1932; Oller, 1933). It was restructured as the Panama Corporation (Canada) Ltd. of Montreal in 1932 (Hull, 1940), and continued gold mining until the industry was stopped in the allied countries in 1942 as non-essential during World War 2. The company was wound up sometime between 1945 and 1951."

15.3.9 The Snyder Banana Co

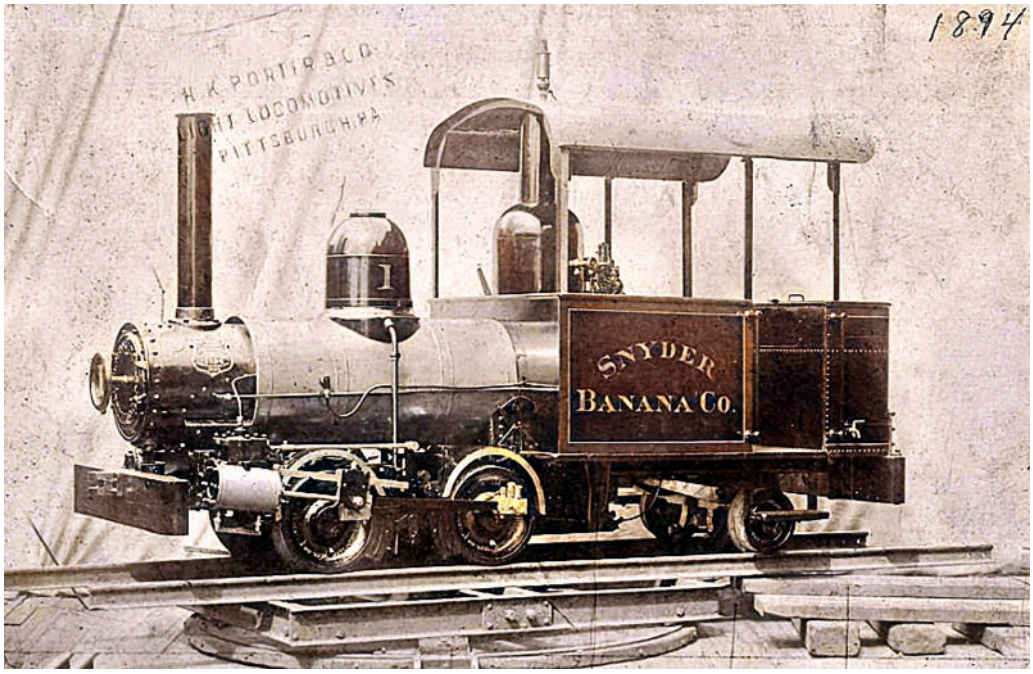
Background

Gauge 2' 6".

0-4-2T d/w ?, cyls. 5x8", built by Porter in 1898 (first two) and 1899 (remainder)

Ordered for Snyder Banana Co., Mobile, Alabama. Third and fourth certainly later transferred to Boca del Toro, Panama, but possibly others too.

1	w/n 1894	
2	w/n 1895	
?	w/n 2015	
?	w/n 2016	Then moved to Golfito, Costa Rica.
6	w/n 2102	



During the 1980s excavations for a pipeline on Colón Island at Bocas del Toro unearthed the remains of two small locomotives. Whilst the precise location of the Snyder company's plantation is currently unknown, these locos – one of them

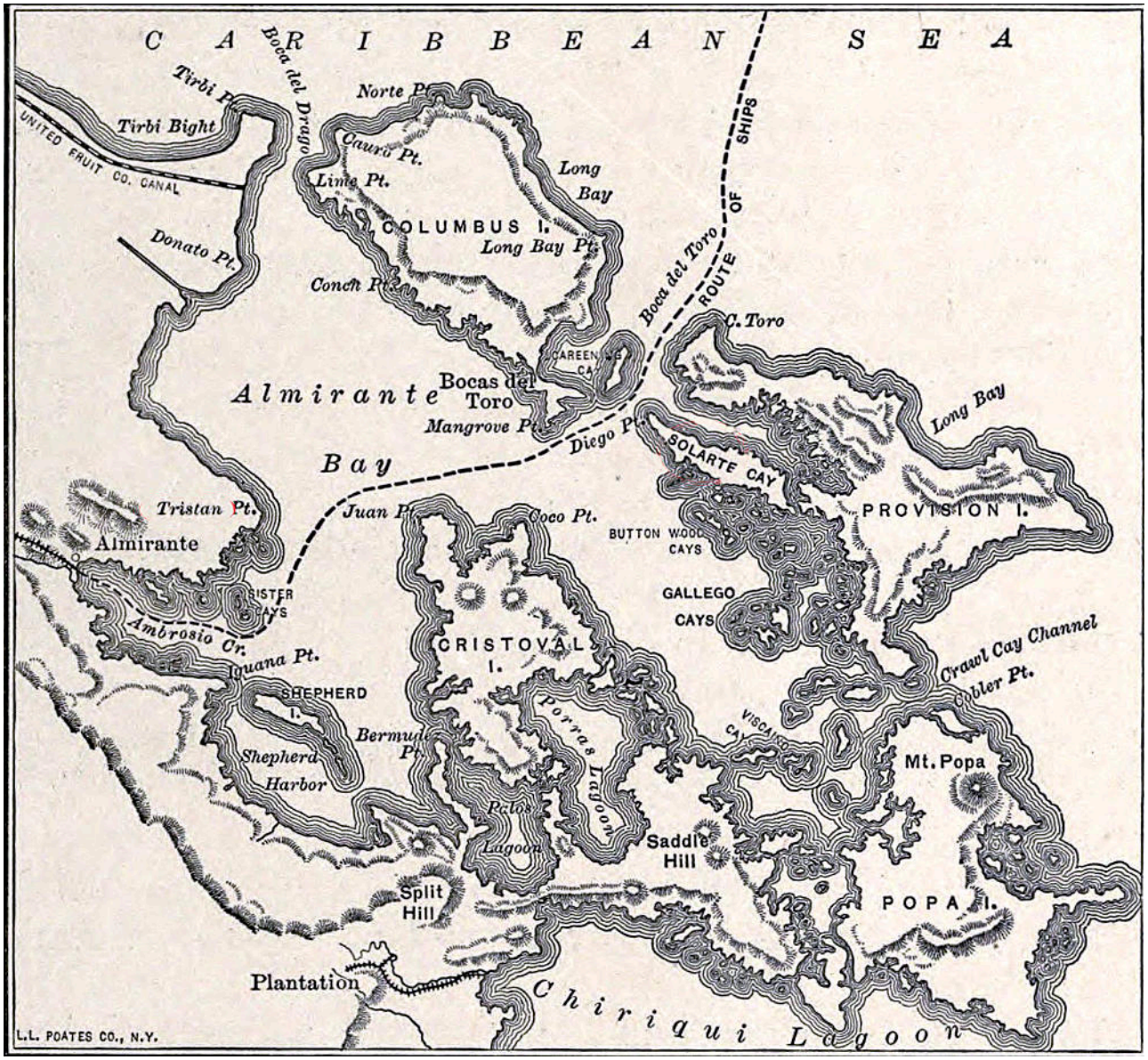
definitely an 0-4-2T – both look at though they might have been Porters of the type illustrated above. Note the domes over the fireboxes, and the bases of the sand-domes, also that they vary in design. There may also be a third survivor.

Obviously the first photo shows two of the rescued derelicts appearing to be cared for and painted, whilst the second shows them very much neglected. However, it is not clear which is the more recent view.

Another plantation railway in the area?

The following map shows a short plantation railway to the western side of the Chiriqui Lagoon, south-east of Almirante where the Changuinola line is also shown. I have no idea of the name of the plantation, or whether it owned a locomotive. It might even have been a Snyder plantation. However, it is recorded here in case any further information pops up.

Another map, that displayed in section 15.3.3 on the *FC Nacional de Chiriqui*, shows a railway slightly further south, reaching the Chiriqui Lagoon at Punta Robalo. They might have been the same line, merely mapped inaccurately, or two different ones. That other map suggests that either or both might have 15-20 km. long, certainly long enough to have made good use of locomotives.


C A R I B B E A N S E A
Boca del Drago
Tirbi Pt.
Tirbi Bight
UNITED FRUIT CO. CANAL
Donato Pt.
Norte Pt.
Caura Pt.
Lima Pt.
COLUMBUS I.
Long Bay
Long Bay Pt.
Conch Pt.
Boca del Toro
ROUTE OF SHIPS
C. Toro
CAREENING CAY
Almirante Bay
Bocas del Toro
Mangrove Pt.
Diego Pt.
Long Bay
SOLARTE CAY
PROVISION I.
BUTTON WOOD CAYS
GALLEGO CAYS
Tristan Pt.
Almirante
Juan Pt.
Coco Pt.
SISTER CAYS
Ambrosio Cr.
Iguana Pt.
CRISTOVAL I.
Crawl Cay Channel
Cobler Pt.
SHEPHERD I.
Bermuda Pt.
Shepherd Harbor
Porras Lagoon
VISCAINO CAY
Mt. Popa
Peto Lagoon
Saddle Hill
Split Hill
POPA I.
Plantation
Chiriqui Lagoon
L.L. POATES CO., N.Y.

15.3.10 Porcella Vicini & Co.

Background

Gauge 2' 6".

2-6-0 d/w 33", cyls. 10x16", built by Baldwin in 1916

Ordered via Porcella Vicini & Co. of Cristobal Colón, Panama. This company were agents, working principally in the Dominican Republic.

4 w/n 43587

15.3.11 Asiatic Petroleum Co.

Background

Gauge 2' 6". Location unknown.

2-6-0 d/w 33", cyls. 10x16", built by Baldwin in 1928

Ordered for Asiatic Petroleum. BLW class 8-14D nos. 44-45. Spec. is in vol. 79 p 179.

1 w/n 60691

2 w/n 60692

15.4 Unidentified locomotives

Krauss

D 5703 1908 XIV af Bn2t 600 neu Arthur Koppel für Panama

Porter

0-4-0T d/w ?, cyls. 7x12", built by Porter in 1891

Ordered by Junction Iron Co., then Rock Run Iron Co.; later to SI&E no. **1984**; sold 8/18/24 for Enrique Halpen (Halphon?) & Co., Panama Canal Zone. Also to or maybe from H. T. Cottingham in Panama at some point in 1924. 3' 0" gauge.

? w/n 1293

2-4-2 d/w ?, cyls. 8x14", built by Porter in 1896

Ordered by Panama Railroad & Steamship Co. If this was built to standard gauge, as in the Porter list, then it might have been destined for a PR&SCo wharf other than on the isthmus,eg. within the USA.

1 'IZALCO' w/n 1694

0-4-0T d/w 24", cyls. 7x12", built by Porter in 1914

Ordered by Edgar Bros., Dedick, Georgia. To SI&E no. **1943**; sold 8/18/24 to Enrique Halpen & Co., Panama Canal Zone. 3' 0" gauge.

? w/n 5558 or 5588?

0-4-2T d/w ?, cyls. ?, built by Porter in ?

Ordered by ? Origin uncertain,

? w/n ?

Captured by Costa Ricans around 1910. Entered the *FC al Pacifico* fleet as no. **14 'GANDOCA'**. Later used as San José workshops shunter until 1970s and now preserved at *FCalP* workshops in the city.

An unidentified photo found in the *Almirante Old Bottles & Stories* page on Facebook. That suggests that the loco hasd operated in the Changuinola or Bocas del Toro areas.

Other references not yet placed

Canal Record v3 p403, records switch engine **8** was moving cars on dock trestle at Colón. An accident occurred when stakes on cars broke.

Vol 2, two French engines coupled together fell off a trestle at Miraflores on Sept. 3rd 1908. All four enginemen killed.

15.5 Appendices

15.5.1 Appendix 1 Locomotive-related news items from the French period

Background

The following mentions of locomotives were found during a superficial trawl through issues 1 to 200 of the twice-monthly journal *Bulletin du Canal Interoceanique* between 1879 and 1887. This cannot therefore be regarded as an exhaustive list. These issues are available via https://catalog.hathitrust.org/Record/009793524

Note that locomotives were regarded as small and relatively expendable items of equipment, when compared to the big individually named dredgers, for example. Therefore they tend to be mentioned casually in passing, rather than in any detail.

It should also be noted that the French project, unlike the succeeding American one, involved the use of a large number of sub-contractors working at particular sites. Therefore the French and Belgian-built tank locos were farmed out for long periods to a multitude of locations rather than returning each night to major depots.

Whilst in general irrelevant material has been excised from the sentences or paragraphs copied below, occasionally extended sections have been left in to illustrate the range and quantities of other materials that were imported for the canal project.

Issue 43 pp380-381, 1st June 1881

AVANCEMENT DES TRAVAUX

Les correspondances que nous recevons de Panama, sous la date du 30 avril dernier, nous signalent que les travaux entrent dans une nouvelle phase. Les opérations de nivellement et de reconnaissance du terrain s'achè-vent, le tracé de la ligne du Canal se précise de plus en plus ; il en résulte que les points sur lesquels la tranchée va être attaquée sont successivement choisis et que l'on s'occupe activement, à présent, de la construction des habitations, baraquements et abris nécessaires aux travailleurs des chantiers.

La grande maison en bois, achetée à New-York, venait d'être remontée à Gatun, à proximité des ateliers dont on prépare les terrains, et allait être habitée le 8 mai courant. Les vingt maisons de moindres dimensions, achetées à la Nouvelle-Orléans, sont également presque toutes montées et en partie occupées.

Les poutres, planches et madriers, arrivés avec ces dernières maisons, sont débités pour la même affecta-tion ; une scierie est déjà installée à Colon au centre du terrain qui sert de lieu de dépôt au premier matériel dé-barqué; des hangars y sont en montage pour les approvisionnements attendus.

Vingt nouvelles baraques vont partir de France et cinquante autres de la Nouvelle-Orléans, en même temps que le deuxième chargement, de 750 à 800 mètres cubes de bois, commandé dans cette région. Un troisième chargement, d'environ 1,000 mètres cubes, vient d'y être commandé.

De gros bois de construction sont achetés à Panama même pour pourvoir aux installations les plus urgentes.: des cales de montage doivent être établies à bref délai, pour recevoir les coques de dragues, porteurs de déblai et chalands, dont les éléments, en cours d'exécution dans les usines d'Europe, arriveront successivement à Colon dès le mois de juillet prochain. Des ateliers et chantiers de montage, avec grues, forges et machines-outils, doivent également être bientôt prêts à mettre sur leurs roues les excavateurs, locomotives et wagons de terrassement qui devanceront dans l'isthme le matériel de draguage.

En effet, les pièces du premier excavateur système Couvreux sont parties d'Anvers pour Colon le 23 avril dernier et doivent être arrivées aujourd'hui ; le second excavateur vient de partir du même port ; les locomotives et wagons vont suivre dès le 15 juillet prochain ; il n'y a pas un instant à perdre dans l'isthme pour que l'on puisse recevoir utilement ce matériel, et nous cons-

tatons que la plus grande activité y règne dans ce but.

Voici un aperçu des appareils déjà -commandés, en cours d'exécution, qui vont successivement être livrés à Colon, de ce jour au mois d'octobre prochain :

2 excavateurs déjà partis;

2 (excavateurs) en construction;
10 locomotives-tenders.
400 wagons de terrassement;
840 tonnes de rails (en partie expédiés);
12 tonnes éclisses (—);
Traverses, boulons, plaques tournantes, changements de voies, etc. (en partie expédiés);
82 tonnes rails, wagonnets, etc. pour voie étroite (déjà partis);
4 dragues à vapeur;
6 bateaux porteurs de déblais;
18 chalands;
1 ponton bigue à vapeur de 40 tonnes;
1 grue à vapeur de 5,000 kilog. sur ponton;
1 grue roulante à vapeur de 2,000 kil. (déjà partie);
...

Issue 51 pp443, 1st October 1881
List of orders placed so far included:
Mars 1881 Commande de dix locomotives-tenders.
Juin 1881 Commande d'une machine-locomotive de 25 chevaux. (?)
Septembre 1881 locomotives et wagons seront montés á Gatun.

Issue 54 p466, 15 November 1881
A list of material shipped from Europe within the past fortnight included
"2 locomotives-tenders de 27T á 3 essieux couplés,"

Issue 57 p491, 1st January 1882
Amongst a list of material arriving from Europe:
"Du 11 décembre: 2 locomotives-tenders de 27 tonnes, avec de nombreuses pieces de rechange;"

Issue 64 p551, 15th April 1882
*"Montage de matériel à Colon.– La locomotive n° **3** a été essayée le 25 février et a pris tout de suite le service du chantier de Monkey-Hill, en concurrence avec la locomotive n° **2**. La locomotive n° **4** était terminée dans les premiers jours du mois de mars et devait aller au chantier d'Emperador, où se trouvait déjà la locomotive n° **1**.*

Issue 65 pp557-558, 1st May 1882
*"Accident de chemin de fer de la Culebra. — Les dernières nouvelles reçues de l'isthme ont fait connaître un malheureux accident de chemin de fer survenu au chantier de la Culebra. Le 20 mars dernier, dans la matinée, le feu fut mis à un tas de broussailles qui gênait la circulation aux environs d'une voie de garage branchée en ce point sur le chemin de fer de Colon à Panama. Comme, par suite d'un fraichissement de la brise, le feu menaçait de s'étendre et de gagner des baraques en bois, ainsi que quatre wagons chargés de traverses qui se trouvaient sur cette voie, on envoya demander la pompe à incendie du campement d'Emperador, situé à environ 4 kilomètres de là. Le chef surveillant de ce campement, pour arriver plus vite, mit la pompe sur un wagon plat qu'il attela derrière la locomotive n° **1** et partit lui-même sur la locomotive. Gràce à ce secours rapide, le feu ne tarda pas à être éteint et l'en se mit en mesure le soir de rentrer à Emperador.*
A cet effet, il fallut faire quelques manoeuvres entre la voie de garage, où l'on avait ramené les quatre wagons menacés, et le réservoir d'eau do la voie principale du chemin de fer. Dans une de ces manoeuvres, la locomotive tamponna probablement ces wagons dans le haut de la voie de garage, qui présentait une inclinaison de 8 millimètres par mètre; le dernier wagon placé du côté de la partie inférieure de la voie, recevant le choc par contre-coup des précédents, se mit en mouvement sur la pente, bien qu'il eût été calé sur les rails par des taquets en bois, et, en arrivant sur la voie principale, immédiatement après avoir dépassé l'aiguille, dérailla à moitié sur cette voie. Quand la locomotive se mit en marche, la nuit était venue, et après un parcours de 400 mètres, la machine vint donner

sur le wagon qu'elle brisa, mais sans éprou-ver elle-même d'avarie sérieuse. Malheureusement, elle marchait l'avant en arrière, et la plate-forme sur laquelle se trouvaient les quatre hommes qui la montaient, fut bri-sée. Tous quatre furent blesses. Le chef surveillant d'Emperador eut encore, malgré ses blessures, assez d'énergie pour arrêter la machine. Sans cette présence d'esprit, le malheur eût pu prendre de plus grandes proportions.
Les médecins de la Compagnie, prévenus par le télégraphe, arrivèrent immédiatement sur le lieu de l'accident et ramenerent les blessés à l'hôpital de Panama. A la date du 25, le chauffeur avait seul succombé, après avoir subi l'amputation du pied gauche. Les trois autres blessés allaient aussi bien que possible."

Issue 66 p567, 15th May 1882
*"Montage de matériel à Colon.– Deux locomotives dont les pièces venaient d'arriver, ont été mises en montage au commencement d'avril. ... L'excavateur n° 2 aussitôt terminé, a été conduit à Emperador, le 27 mars, parla locomotive n° **4**, qui était destinée aux divers chantiers du massif de la Culebra."*

Issue 68 p583, 15th June 1882
"Commandes de gros material. – 12 locomotives-tenders a 6 roues couplées…"

Issue 71 p606, 1st August 1882
*Montage de material.– Les locomotives nos **9** et **10** ont été terminées et essayées le 27 juin;…"*

Issue 76 p646, 15th October 1882
32 locomotives-tenders de 27 bailles. à 3 essieux couplés, ont été commandées; sont aujourd'hui toutes montées dans l'Isthme ; 7 sont en cours d'expédition et 15 en construction.
Les wagons, à la voie du Panama-Rail-Road (1m515), comme les locomotives, se détaillent ainsi : 200 wagons de terrassement de 4 mètres cubes de capacité sont dans l'Isthme , 100 autres sont en cours d'expédition et 200 en construction; en outre, 40 wagons à bascule, 122 wagons plate-forme, 26 wagons fermés à marchandises, 25 wagons-fourgons pour logements, 60 lorrys et quelques wagons spéciaux pour essais sont dans l'Isthme.
Quant au matériel pour la même voie de 1m515, il comprend, entre autres, 98 kilomètres de rails Vignole en acier de 30 kilog. par mètre, dont 33 kil. sont dans l'Isthme et 65 kil. en cours d'expédition; il comprend en outre 148 croisements et changements de voie en mêmes rails, ainsi que 12 kil. de vieux rails en acier, le tout rendu dans 1 Isthme ou en cours d'expédition.
Le porteur Decauville, à la voie de 0m50, est représenté par 310 wagonnets de 1/2 m. cube de capacité, basculants ou pivotants, qui sont rendus dans l'Isthme, par 185 qui sont en cours d'expédition et 30 en cons-truction, par 2 wagonnets à voyageurs, 10 wagons-cisternes, et 27,5 kilomètres de voie en rails d'acier de 7 kilog. par mètre, qui tous sont dans l'Isthme.…"

Issue 81 p694, 1st January 1883
Expéditions de matériel. — Parmi les expéditions de matériel faites dans ces derniers temps, on remarque les suivantes : ... 2 locomotives de 27 tonnes.
Le 11 novembre. — 5 locomotives de 27 tonnes,
Le 11 décembre. — 5 locomotives de 27 tonnes,
Commandes de matériel. — Les principales commandes faites depuis le milieu d'octobre sont les suivantes :
En octobre. — 20 réservoirs en tôle de 6 à 12 mètres cubes de capacité, pour locomotives, 10 locomotives-tenders de 27 tonnes.
En novembre. — 9 locomotives américaines,

Issue 87 p742, 1st April 1883
Culebra. — Une première locomotive américaine, arrivée démontée le 16 janvier, a été montée dans vingt jours. Une seconde allait aussi étre terminée, et l'on se préparait à en recevoir deux autres. Deux excavateurs américains étaient également en montage. On poussait activement la construction d'une seconde voie d'excavateur et celle d'une rotonde pour locomotives.
Ateliers généraux de Colon. — La section de Culelebra a commencé à monter elle-même le matériel nécessaire à ses

travaux.
L'espace relativement restreint de l'île de Manzanillo, à Colon, ne permettrait pas de procéder avec toute la commodité nécessaire au montage du matériel qui devient de plus en plus nombreux ; les travaux de montage s'exécuteront donc désormais, autant que possible, sur les chantiers mêmes, où les pièces des machines et engins seront expédiées de Colon.
En janvier, les ateliers de Colon… Ils ont monté 5 locomotives…

Issue 88 p750, 15th April 1883
Culebra. — ... L'atelier de la section a monté pendant le mois deux locomotives américaines et un excavateur américain; un second excavateur était presque fini. Le montage des wagons de terrassement était aussi poussé activement ; à la fin du mois, 25 wagons de 4 m. cubes étaient montés.
Paraiso. — ... On a commencé la construction d'un atelier de section et d'une remise a locomotives. ...
Ateliers generaux de Colon. — ... Une locomotive a été complètement montée : plusieurs autres étaient eu montage.

Issue 90 p767-8, 15th May 1883
LES CHANTIERS, DE LA CULEBRA
Les travaux se feront presque complètement avec des machines américaines, comprenant 20 excavateurs Osgood et d'autres types, autant ou plus de locomotives, 300 ou 400 wagons et les ateliers nécessaires, etc. ...
Il y a actuellement dans la section 7 locomotives prêtes à fonctionner, trois excavateurs Osgood et un Thompson, et 70 wagons déchargeant des deux côtés, contenant, chacun environ 3 mètres cubes mesurés sur place. ...
Quatre locomotives fonctionnent : une pour le service des nombreuses voies de garage que le chemin de fer a posées pour l'usage de la Compagnie du Canal; une autre pour porter des rails et des traverses aux niveaux Supérieurs et les autres font le service des excavateurs. ...
La direction des travaux est dans d'excellentes mains; ...
Parmi les constructeurs qui ont des agents sur le terrain, nous citerons : M. Mongomery , représentant MM. Hinckley, constructeurs de locomotives à Boston ; M. Houston représentant l'importante maison de MM. Rogers de Paterson ; M. Clarke, représentant la maison d'Osgood et Mac Naughton, fabricants de dragues et excavateurs. Ce sont de bons mécaniciens, qui ont fait de bons travaux dans l'Isthme, se portant remarquablement bien, montrant combien est sans motif la panique qui s'est manifestée de temps en temps parmi les mécaniciens engagés à New-York et qui disparaissent juste quelques instants avant le départ du vapeur...
M. Steer, qui a été longtemps employé au Southern-Railroad de l'Équateur, est chargé du matériel roulant, et M. Pinaud est un bon chef de magasin.

Issue 93 p791, 1st July 1883
LES TRAVAUX
Expéditions de matériel. — Les principales expéditions de matériel faites dans ces derniers temps, sont les suivantes : Le 11 mai. — 40 wagons de terrassement de 6 mètres cubes, 40 wagons plate-forme, charpente des ateliers nos 1, 2 et 3, 120,000 crampons, 20,000 tirefonds, 31,000 boulons, 2 locomotives-tenders de 27 tonnes, avec 6 paires de roues de rechange, ...
Le 11 juin. — 4 grues roulantes, ceintures de bois pour matériel flottant, 20 wagons de 6 mètres cubes, 2 locomotives-tenders, ... Commandes. — Les principales commandes en cours' d'exécution, sont les suivantes : En mai. — 400 wagons de terrassement de 4 mètres cubes, 20 locomotives-tenders de 27 tonnes, ...

Issue 94 pp804-5, 15th July 1883
EMPERADOR
Dans cette section les attaques de la grande cunette sont commencées au cerro des Echelles, au cerro Lapita, au cerro Emperador, sous la direction de M. Jacquemin, par voie de régie intéressée. Ces installations sont complètement terminées.
Pour assurer l'alimentation des machines, excavateurs et locomotives, il a été construit un barrage sur le Rio-Camacho.
Le chantier d'Emperador comprend 7 kil. 550 de grande voie, 9 excavateurs, 8 locomotives, 113 wagons de

terrassement, 25 wagons pour ballast. ...
CULEBRA Cette section termine, en ce moment, les installations des voies de garage et de décharge qui représentent une longueur de 1,900 mètres environ de grande voie. Il y a sur ce chantier 8 locomotives, 90 wagons et 7 excavateurs. Toutes les habitations, conduites d'eau, atelier de section, magasin, remise à locomotives sont terminés.
...
...
GROS MATÉRIEL
Les commandes et les expéditions de matériel sont réglées de manière à pourvoir largement aux facultés de montage des ateliers de Colon ; c'est pour activer ce labeur spécial et dégager la section de Colon, que plusieurs des sections de la ligne ont commencé à monter leurs machines sur place. Ces dispositions seront développées dans une large mesure.
A la date du 1er mai, la situation du gros matériel était la suivante (non compris le matériel des entre-preneurs américains) :

Designation	***Dans l'isthme***			***Expedie ou en***	***Totaux***
du materiel.	***Monté.***	***En montage.***	***A monter.***	***construction***	
Dragues	*4*	*»*	*»*	*1*	*5*
Bateaux porteurs divers	*6*	*4*	*»*	*52*	*62*
Débarquements .	*1*	*1*	*»*	*2*	*4*
Remorqueurs	*12*	*3*	*2*	*16*	*33*
Excavateurs	*18*	*»*	*3*	*46*	*67*
Locomotives	*29*	*»*	*»*	*69*	*98*
Grues roulantes.	*13*	*2*	*»*	*21*	*36*
Wagons de terrassements	*444*	*25*	*92*	*1079*	*1640*
Wagons P. R.R .	*59*	*126*	*15*	*113*	*313*
Rails de 30 k (voie)	*22.777m*	*»*	*19292m*	*43.060m*	*156029m*
Locomobiles	*10*	*»*	*12*	*7*	*29*

Les commandes se continuent; six nouvelles dra-gues, vingt-cinq grues à vapeur, cinq cents wagons de terrassement et soixante-douze kilomètres de gros rails sont en prévision.
TRANSPORTS
Pour faciliter à la Compagnie du chemin de fer de Panama, le transport rapide du matériel et des approvisionnements destinés aux chantiers du Canal —transports qui ont pris un développement destiné à s'accroître encore, — nous avons fait, aux Etats-Unis, l'acquisition d'un matériel roulant important. Une convention a réglé, dans l'intérêt des deux Compagnies, le mode suivant lequel les transports doivent s'effectuer.

Issue 97 pp825-6, 1st September 1883
LES TRAVAUX
Expéditions de matériel. — Les principales expéditions de matériel faites dans ces derniers temps, sont les suivantes : Le 11 juillet. — 4 excavateurs, 70 wagons de 6 mètres cubes, 25 wagons de 3 m. c., 4 locomotives, 6 essieux montés, 1 grue à vapeur, 26 réservoirs, 10 croisements et changements de voie, complément des charpentes des ateliers n° 1, 2 et 3, ceintures en bois pour matériel flottant.
...
Le 11 août. — 4 excavateurs, 3 locomotives, 45 wagons de 6 m. c., 3 pompes, 39,000 kil. de cordages.
Matériel monté en juin. — Un rapport venu récemment de l'Isthme, a fait connaître le matériel qui y a été monté pendant le mois de juin. ... 20 réservoirs à eau destinés à l'alimentation des locomotives ont été assemblés et livrés à différentes sections de la ligne; 20 wagons de terrassement ont été montés et livrés à la section d'Emperador, 50 wagons à plate-'forme ont été montés, sur lesquels 20 ont été mis en service sur le Panama Rail Road.

Issue 98 p836, 15th September 1883
L'énumération suivante du matériel principal mis au service des travaux donnera une idée de la puissance des moyens

d'action.
20 dragues, dont 8 aux entrepreneurs ;
7 bateaux porteurs de déblai à vapeur ;
32 bateaux porteurs de déblai ;
4 appareils de débarquement flottants ;
72 chalands divers ;
33 remorqueurs et canots à vapeur divers ;
72 excavateurs à vapeur ;
52 grues à vapeur de forces diverses ;
94 locomotives pour terrassements;
3190 grands wagons de 4e3 et de 6°" pour terrassement ;
221 kilomètres de longueur de voie ferrée ;
2226 wagons type Decauville ;
53 kilomètres voie Decauville;
28 locomotives pour transports ;
793 grands wagons pour transports;
117 locomobiles ou machines mi-fixes;
185 pompes diverses pour terrassements, épuisements et alimentation.

Issue 101 pp874-5, 1st November 1883
LES TRAVAUX
Colon. — Gatun. — Buhio-SoIdado. — Tabernilla. — San Pablo. —Gorgona. — Gamboa. — Obispo. — Emperador. — Culebra. — Rio-Grande supérieur. — Paraiso. — Panama. — Ateliers géné-raux de Colon.
San Pablo. — Le remblai de la voie d'accès au Canal est à peu près achevé ; une locomotive et 12 wagons transportent journellement les déblais nécessaires à cet achèvement, ainsi que la pierre destinée au ballastage jle toute la ligne.
...
Culebra.— Deux excavateurs fonctionnent à la cote 03, avec quatre locomotives ; ils ont produit 4,400 mètres cubes. Avec 188 wagonnets, on a obtenu 23,050 mètres cubes.
Ateliers généraux de Colon. — Trois bateaux porteurs de déblais sont en montage; un autre a été lancé le 16 septembre. On a monté 2 grues à main et 2 grues à vapeur de 6,000 kilogrammes de force. Le montage des locomotives n°° 22 et 25 est terminé ; la locomotive n° 35 est en montage. ...

Issue 102 p886, 15th November 1883
LES TRAVAUX
Les principales expéditions de matériel faites dans ces derniers temps, sont lés suivantes : Le 11 septembre. — 2 locomotives, 25 wagons de 4: m. c., 39 wagons de 6 m. c., 100 croisements et changements de voie.
Le 10 octobre. — 1,200 brouettes, 1,000 pioches, 3 ponts roulants, 6 bateaux-porteurs de 25 mètres cubes, 10 kilomètres de voie ferrée étroite, 3 excavateurs, 2 locomotives, 4 plaques tournantes, 72 wagons de 4 mètres cubes.

Issue 103 p894, 1st December 1883
Les machines employées au creusement se composent de : 18 dragues, 72 excavateurs, 38 porteurs, 4 débarquements flottants, 94 machines à vapeur pour les ateliers, 3,490 wagons de terrassement, etc., 2,200 petits wagons pour d'autres objets, 293 kilomètres de voie, 28 locomotives, 793 grands wagons, 19 remorqueurs, 74 barques, etc. (This was in an article quoting a British press report from a visitor to the isthmus, so it may have been well out of date.)

Issue 104 p904, 15th December 1883
Ateliers généraux de Colon. — Pendant le mois, on a monté ou achevé de monter 3 grues à main, 3 grues à vapeur de 6 tonnes, 40 wagons de terrassement de 3 mètres cubes, 20 wagons de 6 mètres cubes et' 3 locomotives; lancé 2 bateaux-porteurs de déblais, de 120 mètres cubes, et mis en montage 2 grues à vapeur, 2 treuils à vapeur, 2 locomotives et 3 bateaux-porteurs. La section des ateliers généraux a aussi exécuté des réparations plus ou moins

importantes au matériel de tont genre en service, entre autres, aux dragues n°' 1, 2 et 5, à un clapet à main et à une locomotive,

Issue 112 p965-9, 15th April 1884

LES TRAVAUX

Magasin général à Colon. — Pendant le mois de janvier, il est, arrivé à Colon, pour le compte de la Compagnie, un vapeur chargé de 2,500 tonnes de matériel d'excavateurs, locomotives, wagons , etc., et 7 voiliers chargés de 1,500 tonnes de marchandises diverses et 300,000 pieds de bois.

...

Ateliers généraux de Colon. — On a achevé de monter 8 locomotives à terrassements et 2 locomotives à voyageurs. On travaille au montage de 5 autres locomotives. On a monté 93 wagons à charbon, 30 wagons de terrassements de 6 mètres cubes et 40 de 4 mètres cubes.

...

SECTION D'EMPERADOR

Huit excavateurs, douze locomotives avec leurs trains de wagons, sans compter pluieurs centaines de waggonets a bras, y sont en fonctionnement tous les jours.

Issue 118 p1028, 17th July 1884

A long article on the Panama RR, in which the only relevant reference to locomotives was:

Les 23 locomotives en service, le matériel roulant considérablement accru, les ateliers de machines où travaillent quotidiennement 307 ouvriers, permettront de faire face à tous les besoins, bien que les premiers mois de 1884 démontrent que le trafic sera beaucoup plus considérable cette année que la précédente.

Issue 119 p1038, 1st August 1884

Les Ateliers de Colon, complètement organisés, en plein fonctionnement, ont pu livrer, eu avril dernier, aux diverses sections, 11 locomotives, 211 wagons de terrassement de 4 mètres cubes et 40 wagons de 6 mètres cubes.

Issue 119 p1041, 1st August 1884

Nous sommes heureux d'avoir à vous annoncer qu'il ne reste plus à attendre que 1,500 wagons, 28 locomotives, 1 drague marine, 10 dragues à déversoir, 12 dragues américaines, 3 hopper barges, 10 clapets à mains, 31 chalands, 25 locomobiles, 20 excavateurs, 68 pompes, 50 plans inclinés, 50 groupes de 126 lampes pour l'éclairage des travaux de nuit, des chalands et bateaux pour l'approvisionnement des chantiers, dont le nombre sera déterminé selon les besoins, quelques appareils de perforation et de dérochement. ...

Tout le reste du matériel nécessaire est dans l'Isthme actuellement, ou va y arriver.

Il comprend : 79 excavateurs, 20 transporteurs, 256 pompes, 56 appareils de levage, 38 treuils à vapeur et 814 engins de levage divers, 122 locomotives, 8,961 wagons, 418 kilomètres de voies ferrées, 21 dragues, 4 bateaux à vapeur, 30 remorqueurs, 316 appareils flottants divers, 72 locomobiles.

Issue 123 p1074, 1st October 1884

Service des transports. — Il a été expédié, pendant le mois, sur la ligne de Colon à Panama 529 wagons de matériel divers, qui ont été répartis dans les différentes sections et qui représentaient plus de 3,000 tonnes de matériel, 1,260,000 pieds superficiels de bois et d'autres colis volumineux mesurant ensemble 1,260 pieds cubes; c'est, notamment, 400 mille pieds de bois de plus qu'en juin, soit un excédent à peu près égal à celui que le mois de juin présentait déjà sur le mois de mai.

Le chemin de fer a, de son côté, transporté, pour le compte de la Compagnie du Canal, 3,442 colis pesant en tout 190 tonnes.

En outre, 183 wagons de terrassement et 2 locomotives ont été expédiés dans la section, ce qui donne un excédent de 63 wagons sur le mois de juin.

...

A la fin de juillet, la Compagnie avait en circulation sur la ligne 580 wagons plate-forme ou à charbon et 40 wagons à marchandises.

Les 1,858 travailleurs arrivés à Colon pendant le mois ont été expédiés aux divers chantiers. h n juin, il en était arrivé 1,236.
Ateliers généraux de Colon. — ...
Deux chalands en fer de 100 tonnes ont été mis en montage, et, comme on l'a signalé dans le précédent Bulletin, les ateliers de Colon ont terminé et livré aux sections 2 locomotives, 178 wagons de terrassement et 2 grues à vapeur. En juin, ils avaient livré 5 locomotives, 166 wagons, 2 grues, 1 bateau porteur de 100 mètres cubes de capacité et 1 chaloupe à vapeur.

Issue 130 pp1138-9, 15th January 1885
LES TRAVAUX
Dans le rapport qu'il a présenté aux actionnaires le 23 juillet 1884, M. Ferdinand de Lesseps, disait :
Nous sommes heureux d'avoir à vous annoncer qu'il ne reste plus à attendre que 1,500 wagons, 28 locomotives, 1 drague marine, 40 dragues à déversoir, 12 dragues américaines, 3 hopper barges, 10 clapets à mains, 34 chalands, 25 locomobiles, 20 excavateurs, 68 pompes, 50 plans inclinés, 50 groupes de 126 lampes pour l'éclairage des travaux de nuit, des chalands et bateaux pour l'approvisionnement des chantiers, dont le nombre sera détermine selon les besoins, quelques appareils de perforation et de dérochement. ...
COMMANDES
En septembre — ... 28 locomotives-tenders de 27 tonne :, avec rechanges; ...
EXPÉDITIONS
...
En janvier. – ... 6 locomotives de 3 tonnes 1/2 à la voie de 0m50; ...

Issue 147 p1313, 1st October 1885
Voici le tableau donnant la situation, en juillet, du materiel de la Culebra :

Appareils	*Livres*	*Utilises en juillet*	*Pret a etre utilises des le retour de la saison seché*
Excavateurs	*12*	*2*	*10*
Locomotives	*9*	*4*	*5*
Wagons	*1417*	*288*	*1129*

Materiel pret a fonctionner dans los entreprises Lousteau, Lalanne, Percepied et Thirion, et que les pluies ou les crues des cours d'eau ne permettent d'utiliser qu'au retour de la saison-seche :
10 excavateurs:
18 locomotives :
403 wagons.
Materiel a la disposition des entreprises Jessen et Carcenac :
3 excavateurs:
4 locomotives:
71 wagons.
Ces indications noes paraissent justifier completement ce que nous ecrivions dans le Bulletin du 1" septembre : Les resultats obtenus pendant la saison des fortes pluies, disions-nous, permettent de bien augurer de In campagne prochaine (1885-1886).

Issue 149 p1329, 1st November 1885
Au chantier du Haut-Obispo, un excavateur Osgood rend "de tres bons services." Le rapporteur croit, cependant, que "la toute puissance de cot appareil" n'est pas utilisee par l'entrepreneur, et qui'l faudrait employer "plus de machines" pour l'enlevement des wagons chargés. "Il faudrait, lisons-nous, dans le Rapport, deux locomotives pour en obtenir toute la production desirable. Avec ces deux machines, l'excavateur, qui realise 300 metres cubes par jour, en ce moment, en produirait facilement 450."
...
A LA CULEBRA, le gros materiel en aout consistait en 12 excavateurs, 9 locomotives, et 310 wagons ; Ie petit materiel comprenait 159 croisements, 1910 courbes ; 1,077 wagonnets el 14,504 metres de voie. Les entrepreneurs,

troublés par les pluies, continuaient leur installation par Ia mise en oeuvre de tout le materiel prévu, des le retour de la saison seche.
Sur le versant du Pacifique, entreprise Samson disposait de 77 wagonnets, 5 croisements, 53 courbes et 1,346 metres de voie ; l'entreprise Gros avait 18 wagonnets, 3 croisements, 28 courbes et 752 metres de voie; — l'entreprise Sosa et Musso comprenait 122 wagonnets, 11 croisements, 265 courbes et 2,630 metres de voie; — entreprise Carcenac, 2 excavatours, 3 locomotives, 5,050 metres de grande voie, 80 grands wagons, 125 wagonnets, 3047 metres de voie, 37 croisements, 259 courbes diverses — l'entreprise Jessen et Petro, 1 excavateur, 4 locomotives, 5,585 metres de grande voie, 159 grands wagons, 178 wagonnets, 9,080 metres de voie, 21 croisements et 287 courbes diverses ; l'entreprise Marolle etait sur le point de terminer le remblai du chemin de fer qui dolt relier le terre-plein de la Boca a la carriere du Cerro Sosa.

Issue 150 pp1333-4, 13th November 1885
Dans sa séance du 3 novembre dernier, le Conseil d'Administration a approuvé un contrat passé avec MM. Vignaud, Barbaud et Blanleuil, entrepreneurs français, pour l'exécution des travaux de percement du Canal maritime entre le kilomètre 26,350 et le kilomètre 44, sections de Tabernilla, San Pablo et Gorgona.
L'entreprise comprend les terrassements et dragages de toute nature, les maçonneries, et en général tous les ouvrages accessoires relatifs au creusement du Canal maritime proprement dit, aux déviations du chemin de fer et dérivations du Chagres et autres cours d'eau.
En un mot, les entrepreneurs doivent livrer le Canal maritime terminé, pour la partie contractée, et ce jusqu'au plafond, c'est-à-dire jusqu'à 9 mètres au-dessous du niveau moyen de la mer.
Le matériel affecté à cette entreprise se compose de :
25 kil. de petite voie de 0,50 parties droites.
5 (kil. de petite voie de 0,50 parties) courbes.
400 Changements de voies, aiguilles.
400 Croisements de voies.
900 Wagonnets.
25 Trucs.
2 Locomotives voie de 0,50.
15 Excavateurs ordinaires.
10 Excavateurs de grande production à deux chaînes.
20 Transporteurs de déblais complets.
20 kil. de voies pour excavateurs avec traverses spéciales.
20 (kil.) de voies pour transporteurs, avec traverses spéciales.
1000 Wagons de 4° de caisse, voie de 1,51.
200 Wagons de 6m (de caisse, voie de 1,51.)
100 Trucs de plateformes.
37 Locomotives à voie de 1,51.
200 Croisements et changements de voie simples.
60 kil. de voies de 1m55 et tous accessoires.
8 Plaques tournantes, voie de 1m55.
37 Grues à vapeur, longue portée, griffes d'accrochage.
18 Locomobiles de forces diverses.
35 Croisement et changement à 3 voies.
10 Plans-inclinés. Treuils à vapeur et accessoires.
240 Bennes en tôle pour chargements.
45 Réservoirs pour alimentation de machines.
45 Pompes d'alimentation des réservoirs.
12 Chaudières pour actionner les perforatrices.
60 Perforatrices.
9 Appareils de sondage.
50 Caisses à eau.

10 Dragues françaises de 180 chevaux avec pompes, tuyaux, machines et accessoires.
4 Débarquements flottants et tous accessoires.
25 Bateaux transporteurs.
5 Remorqueurs de 50 chevaux.
50 Petites embarcations de service.
15 kil. de voies de 1m51 raccordées au chemin de fer de Panama à Colon.
60 Changements et croisements de voie.
2 Locomotives à voie de 1m51.
200 Baraquements de 30 ouvriers.
2 Ateliers de sections.
10 Maisons type E1.
20 Maisons type E2.
6 Maisons type E3,ou E4 ou d'un type équivalent.
10 Maisons type Cm ou l'équivalent.
30 Maisons Florenville, simples.
15 Maisons Florenville, doubles.
2 Remises pour 6 locomotives.
Des magasins représentant mille mètres carrés de surface couverte. Des abris pour machines représentant 1,250 mètres carrés de surface couverte.
L'entreprise Vignaud, Barbaud, Blanleuil s'est engagée à exécuter les travaux mentionnés au con-trat dans un délai de trois ans à partir du I" jan-vier 1886.

Issue 150 p1345, 13th November 1885
A Paraiso
L'entreprise Jessen et de Petro disposait, au 1er septembre, de quatre locomotives, 14,565 mètres de voie, et 337 wagons.
L'entreprise Carcenac avait 2 excavateurs, 3 locomotives, 6,097 mètres de voie et 305 wagons;
L'entreprise Sosa et Musso, 2,630 mètres de voie et. 422 wagons.
L'entreprise Gros, 752 mètres de voie et 48 wagons.
L'entreprise Sainson et Noyé, 1,346 mètres de voie et 77 wagons.
A La Culebra
Les entrepreneurs disposaient, en septembre, de 12 excavateurs, 9 locomotives, 1,286 wagons, 151 croisements, 1,940 courbes et 16,501 mètres de voie.

Issue 153 p1365, 1st January 1886
Le Conseil d'administration de la Compagnie, réuni extraordinairernent dans ce but le 22 décembre, a approuvé un contrat important aux termes duquel la Société de Travaux publics et de Constructions a été chargée :
1° Du creusement du Canal maritime, à toute profondeur, dans les sections d'Obispo et d'Emperador, soit entre le kilomètre 41 et le kilomètre 53,600.
2° Des travaux nécessaires à l'exécution du barrage du Chagres et aux dérivations des eaux du fleuve, terrassements de toute nature, maçonneries, tunnels, et, en général, tous ouvrages accessoires, conformément aux plans et projets qui seront remis par la Compagnie aux nouveaux entrepreneurs.
L'état approximatif du matériel consacré à cette entreprise comprend : 330 kilomètres de voie ferrée à 1 mètre 51, avec tous accessoires ;
125 locomotives-tenders;
500 wagons à bascule de 1 mètres cubes ;
3.600 wagons à bascule de 6 mètres cubes;
100 wagons plate-forme de 10 tonnes :
120 wagons-tombereaux pour charbon de 10 tonnes;
60 wagons fermés de 10 tonnes; 250 wagonnets-lorys à frein
18 excavateurs;

450 grues de chargement à vapeur ;
1,000 perforatrices avec chaudières et accessoires.
Les entrepreneurs se sont engagés à avoir terminé leur tache le 1er juillet 1889.

Issue 159 p1459, 1st April 1886

Cependant, ces machines d'attaque, qui constituent en quelque sorte la grosse artillerie chargée de trouer la cuirasse de l'isthme, ne forment que la plus faible portion du matériel. Il faut, pour imprimer le mouve-ment aux 32 dragues et aux 82 excavateurs qui existaient dans l'isthme au commencement de cette année, comme aussi pour emporter les produits de leur travail, près de 300 locomotives, locomobibles et machines mi-fixes ; 16 bateaux à clapets, c'est-à-dire à fond mobile, construits sur le modèle de ceux dont le célèbre Carrier se servait pour engloutir dans la Loire les ennemis de la liberté, de l'égalité et de la fraternité ; des milliers de wagons et wagonnets, circulant sur près de 500 kilomètres de chemin de fer à voie large ou étroite. Ce n'est pas tout. Il a fallu établir des ateliers de réparation et même de construction pour les outils et les machines; et des hôpitaux, autrement dit d'autres ateliers de réparation, pour les hommes; il a fallu bâtir des logements sains et confortables pour l'armée industrielle quiallait, pendant de longues années, se livrer aux plus durs travaux dans ce dangereux repaire des fièvres, où l'homme blanc, rouge, brun ou même noir, qui commet l'imprudence de coucher à la belle étoile, court le risque de ne point se réveiller.
...
(1) Voici, d'après une note publiée par la Compagnie l'état du du matériel existant dans l'isthme au 1er janvier 1886 : Dragues. 32; hopper-barges à vapeur, 10; bateaux à clapets, 16; porteurs à pont tixe, 26; chalands, 103; debarquements flottants, 4; remorqueurs, 29; excavateurs, 82; locomotives, 163; longueur de grande voie de 1m515 d'écartement. 311 kilomètres; grands vagons de terrassements de 6 mètres cubes, 2,102; grands vagons de terrassements de 4 et 3 mètres cubes, 2.530; grande vagons pour transports, 1,:576; vagonnets à voie étroite, 6,723: longueur de voie de 0m50 d'écartement, I75 kil. 323 metres; trausporteurs de deblais. 20; locomobiles et machines mi-fixes, 129; pompes diverses. 468; gros tuyaux pour transports de deblais 6.000; grands ateliers, 3; ateliers de sections, 9. A ce matériel existant, il faut ajouter, eu cours d'exécution ou d'expédition ; 8 dragues, 34 excavateurs, 8 locomotives et 5,800 gros tuyaux pour transports de déblais.

Issue 160 p1479, 15th April 1886

L'EXÉCUTION DU CANAL
Extrait du "Journal des Débats".
Notre collaborateur M. G. de Molinari, correspondant de l'Institut, qui parcourt en ce moment le Centre-Amérique, disait dernièrement, dans une des lettres remarquables qu'il consacre aux travaux de Panama, que les machines accumulées dans l'isthme faisaient au moins le travail d'une armée de 500,000 hommes. Nous sommes loin aujourd'hui, grâce aux progrès de l'art de l'ingénieur, du bon temps où le Pharaon Chéops était obligé d'employer 30,000 hommes pendant trente ans pour élever la grande Pyramide d'Egypte.
Il est facile de justifier par quelques chiffres l'évaluation de M. de Molinari. En travail courant, on peut dire qu'il faut dix hommes pour accomplir la besogne d'un cheval-vapeur. Or, nous pouvons spécifier comme suit le matériel en ce moment dans l'isthme ou en cours de construction ou d'expédition.
Chev. vapeur.
200 locomotives européennes 49.200
60 locomotives américaines 4.800
8 locomotives de 3 tonnes 1/2.. 80
105 excavateurs européens 5.000
11 excavateurs américains 275
4 dragues de 60 chevaux 240
22 dragues de 180 chevaux 3.960
3 dragues marines 1.800
7 dragues américaines 2.100
10 hopper-barges 3.000
4 débarquements flottants 240
22 transporteurs 700

97 locomobiles 970
34 machines demi-fixes 2.720
500 grues à vapeur 10.000
28 grands remorqueurs 2.140
1 ponton bigue 25
444 pompes à vapeur 150
Total 57.400
57,400 chevaux-vapeur soit 574,000 hommes de fer et d'acier. Sans compter les hommes en chair et en os I Quel effort et quelle manifestation écrasante de la puissance humaine !

Issue 162 pp1510-12, 15th May 1886
LES TRAVAUX (a three page summary of work at the various locations, but this time only one mentions locomotives)
Paraïso
L'entreprise Jensen et de Petro, chargée des travaux du kilom. 55,560 au kilom. 58,200, a employé en moyenne, en février, 3 locomotives, 82 grands wagons et 153 wagonnets.
Du kilom. 58,569 au kilom. 59,417, il a été employé par l'entreprise Carcenac, en moyenne 2 excavateurs, 2 locomotives, 53 grands wagons et 81 wagonnets.

Issue 167 p1586, 1st August 1886
(Within a long report)
A Gorgona, il y a trois excavateurs en marche; à Santa-Cruz, cinq autres travaillent en décapement ; sur les chantiers du Haut. et Das-Obispo, d'Emperador, au Lido, dix excavateurs fonctionnent dans les mêmes conditions. Chacun de ces engins, qui peut fournir une moyenne régulière de 300 à 400 m. c. par journée de 10 heures, est desservi par deux locomotives et 80 wagons.
...
Tous ces chantiers sont couverts d'un réseau ferré complet comprenant les voies d'accès, de décharge, de refoulement, de garage ; chacun d'eux a, pour le moment, en nombre suffisant, les locomotives et wagons qui lui sont nécessaires. Je ne crois pas vous étonner, Messieurs, en vous disant, après cette description rapide de votre matériel, que les 163 locomotives, les 4.692 wagons de terrassement et les 314 kil. de grande voie actuellement posés, sont pleinement occupés, et que cette activité ne peut aller désormais qu'en s'accroissant. Sur toute la ligne du Canal, dans chaque chantier, les wagonnets et la voie étroite de 0.50 c. sont utilisés concurremment avec le gros matériel. Il y a 175 kil. de voie étroite et c'est par milliers que l'on compte les "Decauville" ; c'est avec ces auxiliaires que l'on prépare la mise en place des excavateurs et la pose dee voies à grand écartement.

Issue 176 supplement p40, 15th December 1886
(Within a multi-page table listing all kinds of equipment in use)

	Material arrive dans l'Isthme	*Materiel en cours de construction ou d'expedition*	*Materiel non commande mais dont la commande a ete prevue au budget*	*Total*
Materiel roulant				
Locomotives européennes de 27t. a vide				
	112	*8*		*120*
Societe Franco-Belge, 1 a 16, 23 a 32, 43 a 52, 91 a 120.				
Societe Vaccinelle at Couillet, 17 a 22, 33 a 21, 53 a 26 (sic, should read 17 a 22, 33 a 42, 53 a 62)				
Societe John Cockerill, 63 a 78. (NB 63 a 77 maybe correct, with 78 being the first from St. Leonard)				
Societe Saint-Leonard, 79 a 90.				
Treuils roulants pour manoeuvres de gare				
	2			*2*
Locomotives americaines				
	49			*49*

Rogers, 30 dent 26 numerotes et 4 sans numero.
Cook, 17 de 41 a 57.
Hinckley, 2 sans numero.

...
Voie de 0m50
Locomotives systeme Bourdon
8 *8*

Issue 180 p1710, 13th February 1887
Matachin
Entreprise Vignaud, Barbaud, Blanleuil et Cie. — Les attaques des sous-traitants ont produit un rendement supérieur à celui d'octobre, tant sur les chantiers du Canal que sur ceux de la Dérivation, "malgré les pluies qui n'ont cessé de tomber presque journellement", dit le rapport. Le matériel dont disposent les entrepreneurs sur ce point comprend 5 locomotives, 2 excavateurs, 83 wagons de terrassement et 276 wagonnets.
...
Entreprise Société de Travaux Publics et Constructions. — Une vive impulsion a été donnée au chantier de la Corosita en novembre. Sur le versant nord, où l'on a le plus travaillé, les wagons du gros matériel circulent au fond de la tranchée (cote 30) et sur les étages 35 et 40. Les Decauville font graduellement place au gros matériel et sont installés sur les étages les plus élevés (cotes 45, 50 ei 55), où les voies de ce système, formant un réseau important, permettent une grande activité. Un perfectionnement a été introduit sur l'autre versant de la colline, entre les kilomètres 47,200 et 47,700, à l'étage 45, où une voie étroite, mais formée de rails de gros calibre, a été posée. La traction y est faite par une petite locomotive qui donne d'excellents résultats. Le rapport dit à ce sujet :
La première application d'une petite machine de quatre tonnes, pour remplacer la traction par hommes des wagons, est très heureuse. Le rendement est de deux tiers plus elevé qu'antérieurement.

15.5.2 Appendix 2 Loco-related items from ICC annual reports

1903-5 Bristow report

List of Rolling Stock Equipment December 31 1903

Locomotives

Road engines	24
Switch engines	11

…

The list of Rolling Stock equipment remains the same as last year. and all is in serviceable condition, except 11 locomotives which are not judged worth repairing. Of those in service 10 should have new boilers as fast as they can be substituted. A wrecking crane has lately been added to this equipment of 25 tons capacity. The cars are mostly old and light (12 tons burden, with a few of 20 tons), but all in good working condition. Requisition has been made for 100 box cars and 4 coaches, which would provide for such traffic as that of recent years. A much larger and heavier equipment is expected to be required for use in canal construction, and is under discussion.

…

MEMORANDUM OF PRESENT EQUIPMENT OF MOTIVE POWER IN SERVICE OF THE PANAMA RAILROAD COMPANY, FEBRUARY 1, 1905.

Switch Engines.	Number of Engines.
I—In good condition—Boilers have been renewed within the past four (4)) years	7
II—In fair condition—Are in service but will require new boilers in a year or two. These switch engines arc giving satisfactory service.	3
III—Condemned	1
Total switch engines	11

Remarks.

IV—Five of the switch engines are Baldwin four-wheel connected cylinders, 14"x22" diameter, drivers 38". Used in Colon where curves are sharp.

V—Five of the switch engines are Hinckley & Rogers' six-wheel connected 13"x22" cylinders, 42" drivers, and are used in Panama where grades are heavier.

Road Engines.	Number of Engines.
VI—Out of service—Require extensive repairs	4
VII—Light engine, 15"x22" cylinder, used on La Boca Branch (serviceable)	1
VIII—Baldwin eight-wheel. 16"x24" cylinder, 54" drivers, used on passenger trains and satisfactory for this service	6
IX—Cooke eight-wheel, 17"x24" cylinder, 6o" drivers, used in freight service	13
Total road engines	24
Total locomotives	35

Recommend that four additional switch engines be supplied, two each of types IV and V. The ones in service are satisfactory. Recommend also that the thirteen (13) freight locomotives (Type IX) be replaced by ten-wheel 70-ton locomotives, 54" wheel, cylinder 19" x 26".

1904

(Within detailed list of equipment available)

Franco-Belgian locomotives	212	$11,092,695.00
Decauville locomotives	14	$204,000.00
American locomotives	34	$1,902,970.88
Locomotives with winch	2	$52,500.00

…

The total value of the property as entered in these books is about $29,000,000, but it must be understood that this is merely a book value, of which only a small part can be realized by the Commission under the most careful

management. It is satisfactory to report that more of this material than was expected is either in serviceable condition or can be made so by reasonable repairs. The machine shops at Bas Matachin, while not equipped with modern tools, were found in good condition, and are now rendering excellent service in making these repairs. Much of the other materials and equipment, although not abreast with modern invention, can be made more or less useful. For instance, there are about 143 miles of 56-pound rail and a large amount of Decauville track and rolling stock. Probably upward of two-thirds of the 4,000 dump cars on the list can be repaired and remodeled so as to be put to good use. The same is true of many of the locomotives and much of the floating equipment. The locomotives, which are of both American and Belgian build, are light and antiquated, but still available. Of the dredges and derrick boats several have sunk from age and neglect, but of those still afloat the machinery and upper works are fairly good, but in jeopardy from the rotten condition of the hulls, the repair or rebuilding of which is a subject of emergency.

…

PANAMA RAILROAD.

Part of the property sold to the United States Government by the Canal Company was 68,887 shares of the capital stock of the Panama Railroad Company. As the total number of shares was 70,000, the Government acquired an interest amounting to 981 per cent of the whole.

…

When the property purchased from the Canal Company was turned over to the United States the railroad consisted of 47.65 miles of single track between Colon and Panama. In addition to which and including the yards at Colon, Panama, and La Boca there were 26.07 miles of sidings. The general condition of the roadway and buildings is fair.

The railroad equipment consisted of:

Locomotives:	
Road	24
Switch	11
Passenger cars:	
Special	5
First class	8
Composite, first and second class	2
Second class	9
Baggage	7
Freight cars:	
Box	584
Coal	173
Flat	151
Miscellaneous:	
Local express	22
Wrecking	1
Caboose	5
Specie	2
Water	9
Stock	9
Road department	11
Steam pile driver	1

Nearly all this equipment is old, and consequently its condition is poor, considerable repairs being needed. Of the locomotives 11 were in good condition, 3 in service needing light repairs, 13 in service needing general repairs, 5 out of service undergoing general repairs, and 3 condemned. Of the cars 5 passenger, 2 baggage, 30 box, 50 coal, and 40 flat required general repairs. The company owns fairly well-fitted and equipped shops for the repairs of its equipment. These are located at Colon.

1904-5

BUREAU OF MACHINERY AND EQUIPMENT.

Machine shops have been repaired, extended, and equipped at Bas Matachin, Empire, Culebra, and Cristobal, which

are now in operation. These shops have done a large amount of work, both of repair and construction. There are at present in repair and at work on construction 10 new steam shovels, 58 old French locomotives, and 727 old French dump cars. All new rolling stock is as yet in transportation service.

1905-6

THE PANAMA RAILROAD.

Great progress has been made during the year in enlarging and improving the facilities of the Panama Railroad so as to enable it to perform adequately its double functions of handling general commer-cial business and at the same time serving as the essential instrument in the construction of the canal. An entirely new organization of the personnel of the railroad has been created, with a distinct assignment of duties to the head of each department, which went into effect on March 1, 1906. In order to relieve the chief engineer, Mr. Stevens. who was both vice-president and general manager of the road, of some of the details incident to its operation, Mr. Bierd, as a merited reward for efficient service, on recommendation of Mr. Stevens, was promoted on April 23, 1906, from superintendent to general manager. Evidence of the improved efficiency of the road and its terminals is afforded in the fact that during the last eight months of the present year the steamers of the Panama Railroad Company operated out of New York, with sailings every five days, have been promptly discharged and loaded on arrival at Colon, and the schedule has been properly maintained, a condition that had not been possible previously with the tonnage now handled. The service has continued to improve to such an extent that on November 9, 1906, a new schedule cutting off one day from the lay over at each end of ,the route was put into effect. There has been no congestion of freight on the Isthmus since the middle of December, 1905, and with the completion of new wharves and docks and the addi-tion of larger equipment and heavier power constantly arriving, there is slight possibility of congestion in the future. A conference, which was held on the Isthmus in April last, between the chairman of the Commission and the managers of the Pacific Mail Steamship Company, in which representatives of the steamship lines participated, resulted in a settlement of all points of difference as to the handling of freight across the Isthmus and an agreement was reached to work in harmony in the interest of the entire route. The reconstruction of old tracks and the laying of new ones, and the double tracking of the Panama Railroad for nearly its entire length, which is of vital importance to the removal of spoil from the cut, has been prest forward with all possible energy. Of the 35 miles of additional track contemplated about 20 miles have been completed and are ready for use, and the remaining 15 miles are about 75 per cent completed. The probability is that sections of the road will require three or four tracks.

RAILWAY EQUIPMENT. The new railway equipment, ordered in 1905, partly by the Commission and partly by the Panama Railroad Company, has in large measure been delivered on the Isthmus. Of the portion ordered by the Commission there have been delivered 92 locomotives, eight hundred 40-ton flat cars, 325 dump cars, four 10-ton and four 20-ton loco-motive cranes, 2 dipper dredges, and 1 tugboat. Of that ordered by the Panama Railroad Company there have been delivered 24 loco-motives, 500 box cars, 12 caboose cars, 6 passenger coaches, 10 refrigerator cars, 100 ballast cars, 2 flat cars, 1 tugboat, 2 wrecking cranes, and 1 pile driver.

1906-7

Division of motive power and machinery. – …

To date the following machinery has been erected and made ready for service: Sixty-three steam shovels, 284 locomotives, 2,706 dump cars, 18 unloaders, 13 bank spreaders, 33 unloading plows, 3 track shifters, and 7 pile drivers. This work has been done largely at the old plants at Cristobal, Gorgona, Empire, and Paraiso. Work was commenced on new plants at Empire and Paraiso during the year, in order to provide for increased demands made on this division. In addition, limited facilities for handling equipment and making running repairs are being provided at Pedro Miguel, Rio Grande, and Tabernilla. Engine houses for taking care of engines during the night and making running repairs were provided at Lirio, Cucuracha, Las Cascadas, and Rio Grande. Coal chutes for delivering coal to locomotives, and which also have appliances for drying and delivering sand to locomotives, are located at Las Cascadas and Pedro Miguel. Air compressor plants were located at Rio Grande and Empire, furnishing compressed air to operate rock drills, stone crushers, etc. Nine and one-half miles of 10-inch pipe-line mains, with 6-inch and 4-inch leads running into the canal prism, were laid, extending from Bas Obispo to Pedro Miguel. These plants also supply compressed air for operating coal chutes at Pedro Miguel and Las Cascadas, as well as such compressed air as is needed at the Empire and Paraiso shops. A thorough boiler-inspection service was established, covering all boilers on

the Isthmus, including the Panama Railroad. The jurisdiction of the mechanical engineer, master car builder, and electrical engineer has been extended to cover the Panama Railroad.

…

Transportation.—The plant in operation under the transportation department on June 30, 1907, was as follows:

Locomotives	132
Lidgerwood plows	28
Lidgerwood unloaders	18
Spreaders	12
Lidgerwood flat cars	1, 245
12-yard western dump cars	267
20-yard western dump cars	86
6-yard old French dump cars	198
Ballast cars	24

In addition the track and dump department had in operation 3 track throwing machines.

At the beginning of the fiscal year there were 65.8 miles of track in operation. of which 28.1 miles were laid with old Panama Railroad and Belgian rails. At the close of the fiscal year there were 106.78 miles of track in operation in the Culebra division, which is practically all of 70-pound American steel. Along the bottom of the canal from Culebra summit to the White House material yard there are four running tracks, and from Culebra summit to the Pedro Miguel material yard there are three running tracks. These tracks are now in a fairly satisfactory condition, although work has been considerably retarded by the slow arrival of track material, particularly material needed for switches.

1907-8

Light repairs to all classes of equipment at the southern end of the canal were handled at the Paraiso shop, heavy repairs being done at the Gorgona and Empire shops. At the end of the year there had been erected and made ready for service the following equipment: One hundred and one steam shovels, 300 American and French locomotives, 3,451 American and 659 French cars, 20 cranes, 30 unloaders, 9 track shifters (manufactured on the Isthmus), 18 pile drivers (16 manufactured on the Isthmus), 23 bank or earth spreaders, and 46 unloading plows. Maintenance and repair of equipment by the mechanical division, including operation of air compressors, cost $1,951,618.79, and the cost of equipment purchased during the year, and other miscellaneous machinery, in-cluding erection, was $2,590,536.94.

…

TRANSPORTATION.

The equipment in operation under the transportation department of the Culebra division on June 30, 1908, was in good condition and consisted of the following:

Locomotives	156
Lidgerwood plows	10
Lidgerwood unloaders	26
Spreaders	23
Lidgerwood flat cars	1267
12-yard western dump cars	258
20-yard western dump cars	110
Ballast cars	29
12-yard Oliver dump cars	132
Steel flat cars, 40-ton	300
Steel flat cars, 50-ton	183
Track-throwing machines	5

…

(Portion of semi-legible table showing equipment available)

Locomotives	in service June 30 1907	in service June 30 1908
French	?9	1?6
New American	160	?64

1908-9

MOTIVE POWER AND MACHINERY, MUNICIPAL ENGINEERING, AND BUILDING CONSTRUCTION.

Motive power and machinery.—The work of this division includes the erection, preparation for service, and maintenance in good repair of machinery necessary in canal construction; the erection and operation of air-compressor plants; electrical installations, and manufacture and repair work for other divisions. At the close of the year 2,206 men were carried on the rolls, and the expenditures amounted to $5,645,622.18. Three shops, located at Gorgona, Empire, and Paraiso, handle all work except electrical installations, and each is charged with the maintenance and operation of engine houses, coal chutes, and air-compressor plants in its territory.

Shop buildings have been erected at the three localities, those at Empire and Paraiso being completed during the year. With the completion of all authorized work, the Gorgona shops will have 307,000 square feet of floor space, the Empire shops 198,000 square feet, and the Paraiso shops 41,090 square feet. Included under the jurisdiction of the Gorgona shops is the engine house at Tabernilla for handling light repairs to engines overnight; under the jurisdiction of the Empire shops are engine houses at Las Cascadas, Lirio, and Rio Grande; the compressor plants at Las Cascadas, Empire, and Rio Grande, and the coal chute at Las Cascadas; under the jurisdiction of the Paraiso shops are an engine house, car-repair shed, and coal chute at Pedro Miguel. At the Gorgona shops repairs are made to locomotives, unloaders, spreaders, and wooden car equipment, and such foundry and manufacturing work done as is necessary. …

The Empire shops perform general repairs to steam shovels, steel car equipment, rock drills, and similar excavating machinery. Of the 101 steam shovels in service during the year, 55 were given general shop repairs, costing $145,479.41 for direct material and labor charges. …

Light repairs to all classes of equipment at the southern end of the canal were handled at the Paraiso shop, heavy repairs being done at the Gorgona and Empire shops. At the end of the year there had been erected and made ready for service the following equipment: One hundred and one steam shovels, 300 American and French locomotives, 3,451 American and 659 French cars, 20 cranes, 30 unloaders, 9 track shifters (manufactured on the Isthmus), 18 pile drivers (16 manufactured on the Isthmus), 23 bank or earth spreaders, and 46 unloading plows.…

…

DIVISION OF MOTIVE POWER AND MACHINERY. This division commenced the year with fairly complete shop organizations at Gorgona, Empire, and Paraiso, each in charge of a master mechanic, and during the year improvements in facilities and organizations were continued, so that at the present time any work which may develop can be quickly and economically handled.

GORGONA SHOPS.

The Gorgona shops, covering an area of 21 acres and having a trackage of 6 miles, have been equipped with particular view to making general repairs to locomotives, unloaders, bank spreaders, and wooden car equipment, in addition to such foundry and manufacturing work as conditions necessitate. With the completion of work authorized and under construction these shops will embrace the following:

Locomotive department (floor area, 179,993 square feet) :

- Machine shop, 110 by 180 feet and extension 30 by 90 feet.
- General foreman's office and tool room, 32 by 76 feet.
- Erecting shop and platform, 120 by 475 feet (covering 22 pits).
- Transfer table pit, 50 by 475 feet.
- Boiler shop, 90 by 288 feet and extension 90 by 100 feet.
- Blacksmith shop, 60 by 180 feet.
- Power house, 40 by 104 feet.
- Bar iron rack, 20 by 115 feet.
- Paint shop, 60 by 120 feet.
- Office building, 66 by 66 feet.
- Instrument repair shop, 30 by 40 feet.
- Engine house, 50 by 150 feet (containing 2 tracks, washout pits running full length of house, double cinder pits 50 feet long, with necessary water cranes, coal-crane track, and coal storage for hostling and running repairs to engines).
- Sand house, 10 by 40 feet.

Engine-house office, 15 by 15 feet.
Lye-vat shed for cleaning engine parts, 25 by 50 feet.
200-ton blacksmith coal bin.

Car and foundry department (floor area, 127,012 square feet) :

Car shop, 50 by 325 feet (has two lean-tos 30 by 325 feet and 44 by 87 feet. Building covers car shop, machine shop, pattern shop, carpenter shop, office, and blacksmith shop for light work). Planing mill, 60 by 150 feet.
Foundry, 70 by 161 feet (enlarged during year).
Sand house, 25 by 50 feet.
Coke shed, 25 by 130 feet.
Lavatory, 22 by 112 feet.
Latrine, 25 by 62 feet.
Pattern storage, 40 by 60 feet.
Car shed, 110 by 600 feet (covers 48 cars at one time).

…

EMPIRE SHOPS.

The Empire shops, located about midway in the Culebra division, have been specially designed and fitted up for doing general repairs to steam shovels, steel car equipment, rock drills, and similar excavating machinery. With the completion of extensions and new work authorized and in course of construction, the Empire shops will consist of the following:

Locomotive department (floor area, 136,354 square feet) :

Machine shop, 80 by 224 feet.
Boiler shop, 150 by 224 feet.
Blacksmith shop, 80 by 224 feet.
Erecting shop, 80 by 362.5 feet (covering 14 pits).
Paint shop, 20 by 30 feet. 011 house, 16 by 16 feet.
Sand house, 10 by 20 feet.
Cleaning shed, 16 by 32 feet.
S. S. shipper shaft shop, 14 by 32 feet.
Air compressor plant, 31 feet 4 inches by 90 feet 8 inches.
Foreman's office, 12 by 12 feet.
Power plant, 42 by 141 feet.
Electric plant, 35 by 86 feet 2 inches.
Boiler house, 31 feet 4 inches by 72 feet.
Transfer table pit, 60 by 362 feet.

Car department (floor area, 61,875 square feet) :

Car shop, 100 by 405 feet (5 tracks).
Planing mill, 75 by 225 feet.
Office, 30 by 50 feet.
Lavatory, 32 by 50 feet.
Latrine, 20 by 70 feet.

Practically the entire shop plant at Empire was finished and equipped during the fiscal year covered by this report.

…

The following are also included in the operation of the Empire shops, and comprise a floor area of 62,560 square feet:

Rio Grande:

Engine house, 54 by 180 feet (the completion of this engine house made possible the abandonment of the Cucuracha engine house, an old French structure, which was unsatisfactory).
Office and storeroom, 11 feet 6 inches by 15 feet 6 inches.
Oil house. 16 by 16 feet.
Sand house, 10 by 20 feet.
Latrine, 12 by 20 feet.

Air-compressor plant, 44 by 79 feet.
Office, 14 by 19 feet. Store, 10 by 24 feet.
Boiler house (old), 32 by 79 feet.
Boiler house (new), 41 by 89 feet.

Lirio:

Engine house, 26 by 121 feet.

Las Cascadas:

Engine house, 90 by 300 feet.
Shop, 30 by 64 feet.
Store, 33 feet 6 inches by 40 feet.
Air-compressor plant, 35 feet 6 inches by 86 feet.
Boiler house, 46 by 86 feet.
Office, 12 by 16 feet.
Car shed, 20 by 60 feet.
Coal chute (twenty pockets).

PARAISO SHOP.

The Paraiso shop is located on the east side of the south end of the " Culebra cut," and handles light repairs to all classes of equipment on that side and end of the light cut," as well as at the Pacific end of the canal, the heavy repair work being done at the Gorgona and Empire shops. The work of this shop includes locomotive and car work at Pedro Miguel and the operation of the Pedro Miguel coal chute. During the year the erection of an entirely new set of shop buildings was completed at Paraiso, and all the machinery from the old shops, as well as a large amount of new machinery, has been installed, and the shops equipped with water and steam and air lines. It consists of the following:

Paraiso (floor area, 41,090 square feet) :

Machine shop, 60 by 160 feet.
Blacksmith and boiler shop, 85 by 160 feet.
Office, 20 by 50 feet.
Erecting shop, 73 by 150 feet.
Latrine and lavatory, 32 by 60 feet.
Iron rack, 20 by 60 feet.
Carpenter shop, 32 by 60 feet.
Rope walk, 15 by 60 feet.

Pedro Miguel (floor area, 41,382 square feet):

Engine house, 72 by 348 feet.
Car-repair shed, 20 by 78 feet.
Machine shop, 26 by 60 feet.
Oil house, 16 by 16 feet.
Coal chute, 36 by 125 feet (20 pockets).
Car-repair shed (new), 32 feet 5 inches by 260 feet.

…

Statement of principal items of equipment in service or available on the Isthmus on July 1, 1907, and June 30, 1908.

Item.	Average cost each, delivered at Colon.	In service. July 1, 1907.	In service. June 30, 1908.
Steam shovels:			
11-yard dipper	85,787.50	0	1
If-yard dipper	7,100.00	8	10
21-yard dipper	9,381.00	28	42
5-yard dipper	12,760.00	32	48
Locomotives:			
French	4,250.00	99	136
New American	11,600.00	160	164

Cars:				
French dump	225.00		240	659
American dump	1,400.00		455	1,123
Wooden flat	1,050.00		1,501	1,793
Steel flat	861.00	500	500	
Narrow-gauge	227.00	0	35	
Cranes, American	8,400.00	11	20	
Lidgerwood un loaders	5, 000.00	11	30	
Track shifters (manufactured on Isthmus)	5,050.00	3	9	
Pile drivers (16 manufactured on Isthmus)	3,700.00	6	18	
Bank or earth spreaders	5, 200.00	13	23	
Unloading plows	950.00	33	46	

The following is a statement of some of the principal items of repairs accomplished during the year:

Item.	Gorgona.	Empire	Paraiso	Cristobal shops
Panama R R. Co. Locomotives:				
Repaired In shops	58	19	22	
Running repairs	3,232	12,144	6,634	
Erected, new				4

…

1909-10

(Part of a study of lock construction methods)

NARROW-GAUGE ROAD.

A narrow-gauge railroad is used for transporting mixed concrete from the berm to the chamber cranes. The track system is shown on Plate 108 and the difference in elevation between the forebay and bottom of lock chambers is overcome by means of trestles with a grade of 2.5 per cent. The tracks are laid with 70-pound steel rails, which enables the locomotives to attain a greater rate of speed than would be safe on the light rail usually employed. The equipment consists of twelve 11 1/2 ton Porter locomotives and 24 steel flat cars, all equipped with air; each car is large enough to hold two buckets of 64 cubic feet capacity. A train consists of two cars and each of the latter carries a bucket so placed that when alongside a berm crane the buckets may be filled from the corresponding mixers without moving the train. The trains alternate in going into the respective lock chambers and stop under the first chamber crane reached ; the latter places an empty bucket on one of the cars and picks up a loaded one from the same car; the train then moves to the next crane, where the operation of exchanging buckets is repeated, after which it returns on the up track to the mixing cranes with the two empty buckets.

…

TABLE A.—Statement of rolling stock in use by the different departments, as of July 1, 1910.

Description.	Atlantic division	Central division.	Pacific Division	Panama RR	Panama RR relocation	QM dept.	Empire shops	Gorgona shops	Total
…									
Locomotives:									
201-class (ALCo)	6	86	8						100
301-class (BLW)	7	25	8						40
400-class	5	4	3	2	5	1	3	1	24
500-class	9	25	9					1	44
600-class	1	19							20
700-class	9	4	19	1	4				37
800-class (narrow gauge)	18		10						28
Special							1	1	2

…

TABLE C.—Equipment owned by and operated on the main line of the Panama Railroad Company, as of July 1, 1910.

ROLLING EQUIPMENT (part of larger table)

Locomotives:

Road engines	36
Switch engines	27
Engines in Isthmian Canal Commission service	6
Total	69

1910-11

TRANSPORTATION.

The following is a list of equipment in the transportation service of the Atlantic division June 30, 1911:

Standard-gauge equipment:			
	American locomotives		14
	French, Roger type, and old Panama RR locomotives		25
	Wrecking crane No. 64	1	
	Track shifters		3
	Passenger coaches, Gatun-Culebra labor train		
	Box cars – Used as labor cars		14
	Used as bunk cars		2
	Used on wrecking crane as supply car		1
	Rogers ballast cars. rock and sand service. auxiliary mixer		26
	Steel flat standard-gauge cars		25
	Wooden flat standard-gauge cars		5
	18-yard Western dump cars		105
	19-yard Oliver dump cars		48
	12-yard Oliver dump cars		33
	12-yard Western dump cars		58
	Lidgerwood unloaders		1
	Lidgerwood side flat cars		20
Narrow gauge:			
	Locomotives—		
	3-foot 6-inch gauge		10
	3-foot gauge		11
	6-yard Oliver dump cars		75
	Narrow-gauge Western dump cars		36
	Narrow-gauge flats		25

Respectfully submitted.

WM. L. SIBERT, Division Engineer, Atlantic Division.

Col. GEO. W. GOETIIALS, U. S. Army, Chairman and Chief Engineer, Culebra, Canal Zone.

…

The motive power, rolling stock, and construction equipment of the central division in service on June 30, 1911, was as follows:

…

Locomotives:

Decauville, 0 4 0 type	2
12 by 18, 0-4-2 type	1
15½ by 19½, 0-6-0 type	3
16 by 24, 4-4-0 type	2
16½ by 23½, 0-6-0 type	10
19 by 24, 2-6-0 type	104

20 by 26, 2-6-0 type 20

…

TABLE A.—Statement of rolling stock owned by the Isthmian Canal Commission in use by the different departments, as of July 1 1911.

Description	Atlantic divn.	Central divn.	Pacific divn.	Panama RR	Panama RR relocation	Mech. divn.	Total
…							
Locomotives:							
201-class	7	84	8		1		100
301-class	7	20	12		1		40
400-class	8	1	3		3	1	16
500-class	6	10	16		8	1	41
600-class		20					20
700-class	8	3	11		3		25
800-class (3 1/2-foot gauge)							
	21		12				33
American 8-wheel							
		2					2
Decauville, 1/2-meter gauge							
	2	2			4		8
Special						1	1

…

TABLE C.—Statement of equipment owned by and operated on the main line of the Panama Railroad Co., as of July 1, 1911.

ROLLING EQUIPMENT.

Locomotives:	
Road engines	36
Switch engines	22
39 Engines in Isthmian Canal Commission's service	6
Total	64

…

1911-12

TRANSPORTATION.

The following is a list of the equipment in the transportation service of the Atlantic division June 30, 1912:

Standard-gauge equipment :	
American locomotives	18
French, Roger type, and old Panama R. R. locomotives	13
…	
Narrow-gauge equipment :	
Locomotives-3-foot 6-inch gauge	10
3-foot gauge	9
…	

Respectfully submitted.

WM. L. SIBERT, Lieutenant Colonel, Corps of Engineers, U. S. Army, Member of Isthmian Canal Commission, Division Engineer, Atlantic Division.

COl. GEORGE W. GOETHALS, U. S. Army, Chairman and Chief Engineer, Culebra, Canal Zone.

…

CONSTRUCTION AND ENGINEERING—CENTRAL DIVISION

TRANSPORTATION.

Of the locomotives shown as handling dirt and miscellaneous trains, an average of five locomotives per day were used as pusher engines for getting the loaded trains up the inclines at either end of the Culebra Cut, as, the depth of the canal having increased, these in-clines are necessarily longer and somewhat steeper than in previous years. An average of three locomotives per day were used as helper engines in the canal in assisting the road engines in handling trains at steam shovels placed close together in excavating slides and where the grades required the services of more than one locomotive per train. The total number of locomotive days for the above work was 2,432.

…

TABLE A.—Statement of rolling stock owned by the Isthmian Canal Commission in use by the different departments, as of July 1 1912.

Description	Atlantic divn.	Central divn.	Pacific divn.	Panama RR	Office of Chief Eng.	QM dept. store	Mech. divn.	Fortif-ication board	Total
…									
Locomotives:									
201-class	7	78	14	1					100
301-class	11	20	9				1		40
400-class	7	1	3			1	1	3	16
500-class	4	10	22		8	3	1	1	41
600-class	1	19							20
700-class	1	3	7	1		23		6	41
800-class (3 and 3 1/2-foot gauge)	19		12					2	33
American 8-wheel		2							2
Decauville, 1/2-meter gauge		1				2			3
Special							1		1

…

TABLE C.—Statement of equipment owned by the Panama Railroad Co., as of July 1, 1912.

Rolling Equipment	In PRR service	In service of Isthmian Canal Commission			In service of fortif-ication bd.	Total
		Atlantic divn.	Central divn.	Pacific divn.		
Locomotives						
Road	22	7	1	6	1	37
Switch	23	2	2			27
Total	45	9	3	6	1	64

…

1912-13

PLANT.

The following table shows the motive power, rolling stock, and construction equipment of the central division on June 30, 1913.

Item.	Transferred to division during fiscal year.	Transferred from division during fiscal year.	In service June 30, 1913.
…			
Locomotives:			
Decauville, 0-4-0 type			1
Porter, 12 by 18, 0-4-2 type		1	0
Belgian, 15½ by 19½, 0-6-0 type		2	1
Chiriqui, 16½ by 23½, 0-6-0 type		7	3

Baldwin-			
16 by 24, 4-4-0 type	1		3
19 by 24, 2-6-0 type		2	18
Cooke, 19 by 24, 2-6-0 type		2	76
Brooke, 20 by 26, 2-6-0 type			19

…

Of the locomotives shown as handling dirt and miscellaneous trains, an average of seven locomotives per day were used as pusher engines for getting the loaded trains up the inclines at either end of the Culebra Cut, as the depth of the canal having increased, these inclines are necessarily longer and steeper than in previous years. An aver-age of six locomotives per day were used as helper engines in the canal in assisting the road engines in handling trains at steam shovels placed close together in excavating slides, and where grades required the service of more than one locomotive per train. The total number of locomotive days for the above work was 3,945.

…

TABLE A.—Statement of rolling stock owned by the Isthmian Canal Commission in use by the different departments, as of July 1 1912.

Description	Atlantic divn.	Central divn.	Pacific divn.	Fifth divn,	Panama RR	QM dept. store	Mech. divn.	Fortif-ication board	Total
…									
Locomotives:									
201-class	5	76	2	16	1				100
301-class	3	18	3	13			1	2	40
400-class	8	1	1	1	3	3	2	2	21
500-class	3	3	10	14	1	4	1	4	40
600-class	0	19		1					20
700-class	0	1	1	6	1	10		3	22
800-class (3 and 3 1/2-foot gauge)									
	0	2		12		8		3	33
American 8-wheel									
		2				1	1		4
Decauville, 1/2-meter gauge									
		1				2	4		7
Special						1			1

…

TABLE C.—Statement of equipment owned by the Panama Railroad Co., as of July 1, 1913.

Rolling Equipment	In PRR service	In service of Isthmian Canal Commission			In service of fortif-ication bd.	Total
		Atlantic divn.	Central divn.	Fifth divn.		
Locomotives						
Road	19	7	5	12		43
Switch	16	1		1		18
Total	35	8	5	13		61

…

In view of the approaching completion of construction work, all locomotives were inspected and the 102 in best condition were placed on a long-service list and the remainder on a short-service list. No repairs were made to locomotives on the latter list except those necessary for safety.

15.5.3 Appendix 3 Hostling

An article from the *Panama Canal Record*, volume 2 page 77, November 4th 1908.

HOSTLING.

Caring for the Locomotives After Their Day's Work.

At 5 o'clock in the afternoon the Isthmian Canal Commission engineer takes his train to the nearest siding, uncouples his locomotive from the string of loaded or empty cars, and runs the engine to the hostling yard. His dinner over, he goes to his quarters, and the following morning at 6.30 o'clock he is in the cab again. From the time the engineer leaves his locomotive at night until he takes the throttle again in the morning, the engine also is resting and preparing for the next day's work. Its food is two or three tons of coal, several barrels of water, and a few bushels of sand; and once in two weeks it is given a bath in the form of a "washout." The engineer calls his dinner and rest "recreation," and the recreation of his locomotive "hostling." Hostling is as essential to the engine as recreation is to the engineer.

Between fifty and sixty locomotives are hostled every night at Pedro Miguel. During the day screws have begun to show wear, a drawbead has weakened, a grate given out, lubricators and injectors, rod brasses, air brake equipment or trucks need repairing, the guides on the piston cross-head must be closed, or some other little weaknesses have developed in several of the engines; and those so affected are run into the shed, over the repair pit if necessary, and the machinist begins the repairs at once. The other engines are turned over to the six "gold" men known as "hostlers." These men have served as engineers and are now hostling, waiting a chance to take a regular run.

Each hostler takes four locomotives in one train and runs them to the coal chute, then to the sand chute, and then to the water pipe. This order may he changed as convenience dictates, but the process remains the same, and when the hostler leaves the engines they have a full store of coal, a tank full of water, and sand enough in the sand box to meet the next day's demands. Firemen then separate the cinders from the coal, dump them, and bank the fire. The oil cups arc filled, the light repairs finished, and the locomotives cleaned, usually by midnight. After that the hostler's work is merely to visit each engine two or three times until 5 o'clock, and see that all is going well. Between 5 and 6 o'clock the fires are raked again, and when the engineer takes his locomotive at 6.30 o'clock the fire is bright, and the gauge registers from 120 to 150 pounds of steam.

Four engines are "washed out" every night, and an order is preserved so that each has a thorough cleaning once in fifteen days. Like the locomotives that need repairing, those to be washed out are separated from the rest early in the evening and hostled at once. They are then run over the cinder pit where the fires arc dumped, and taken into the house where the steam and water are allowed to escape, while cold water is forced into the boilers and running out carries with it the loose matter that has collected during two weeks. All this takes from 5.30 o'clock in the evening until 2 o'clock the next morning, when the fires are started again, and at 6.30 the engines are ready for their work.

To one not accustomed to such work the hostlers and their helpers moving in and out among the great engines, with the shadows deepened by an occasional headlight, the gleam from the cinder pit, or rays from the workmen's lanterns, make an eerie sight. Fifty locomotives maneuver in files of four on only six tracks, and so close to one another that the trains almost touch, while half a hundred men hurry about among them. It looks like a mix-up and sounds like discord; but the engines start only on double signals, there are no collisions, accidents are few, the work moves swiftly. At daybreak the result of it all is seen in the locomotives standing ready, like horses at the barrier. On the morning of October 29, at 6.30 o'clock 52 locomotives left the yard in nine minutes, and often the clearance is made in seven minutes. Between 6.30 and 6.41 o'clock two locomotives had left the yard. coupled to a train of sixteen 20-yard cars which had been left on the siding the night before, had stretched the unloader cable, and started to the La Boca dumps.

Many railroad men on the Isthmus are of the opinion that this daily performance at Pedro Miguel is quite unique in railroading. It is unique on the Canal work, however, only because it is the one place where so many locomotives are stationed over night. At Las Cascadas 35 engines are handled in the same way and at Empire, Gorgona, and other points like work is done with the smaller number of locomotives hostled at those places. All the bristling for the Central Division is done by the Mechanical Division, and a statement of the work in September is as follows, the material charged to this account being for coal, oil, sand and waste:

The average number of men employed in hostling for the Central Division in September was—Gorgona, 16; Tabernilla, 6; Santa Cruz, 5; San Pablo, 15; Las Cascadas, 29; Empire, 16; Rio Grande, 9; Bas Obispo, 5; Pedro

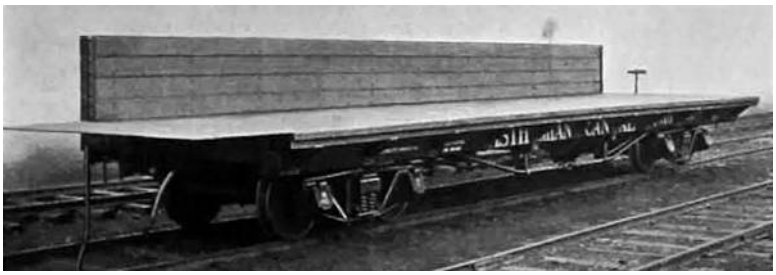
Miguel. 47; La Boa, 4. At Pedro Miguel the facilities for hostling are good, although not faultless. The track lay-out is well adapted to sending the locomotives out in a short time, but not to handling them so easily on their return from work. Four tracks run through the engine house, which can accommodate twenty engines, and outside the house are one track and two leads to the yard. The cinder pit extends under two tracks between which is a depressed track on which the cinders are hauled out. Double tracks lead to the coal chute and one track runs up the incline. In the chute an engine run by compressed air furnishes the power for hauling cars up the incline by cable. There are 24 pockets and the capacity is 120 tons. In the coal chute is a sand plant in which sea sand is dried, sifted, and lifted by air to the storage bin. An oil house is nearby. The machine shop at Pedro Miguel is equipped to do any light repairing. The machinery consists of: One French blacksmith's fan, 20 inches in diameter; one 16-inch emery wheel—double; one 40-inch grind stone; one 48-inch grind stone; one combined wet and dry grinder, 12-inch table; one drill press, 16-inch table; one drill press 31-inch table; one old French drill press; one engine lathe, lsAfti -y 60-inch; one 14 Blond lathe, 21 by 10-inch; one French shaper, 18-inch stroke ; one American shaper, 24-inch stroke; one 2-horsepower air motor; one old French engine, cylinders 8 by 12-inch, used for power at shop; one old French pump 31/2 by 4-inch, one pipe bending machine, bends pipe from 1/2-inch by 2-inch diameter; one pipe cutting and threading michine, (will handle pipe from 1 to 6-inches diameter); one pipe cutting and threading machine, (will handle pipe from 21/2 to 12-inches diameter); one power hack saw, 5½-inch stroke; one old French punch and shear, 14-inch throat; one double head bolt cutter, 1/2-inch to 2 inch; one portable air-brake testing machine; one forcing press, 30 by 36-inch, capacity 30 tons; one vertical wood boring mill, ½ inch to 2-inch; one rip saw, table 3 feet 3 inches by 6 feet; one 2-cylinder air driven engine for coal hoist.

Las Cascadas yard is shorter than that at Pedro Miguel, and the double cinder pit is - at one side the yard and nearer the engine house. There are five tracks through the house and one on each side. The capacity of the house is 30 engines. The coal and sand chutes are of the same type as at Pedro Miguel. The machine equipment is as follows: One 44-inch blacksmith's fan; one emery wheel and stand, 16-inch; one 48-inch grind stone; one French drill press. No. 9, 16-inch swing; one American upright drill press. 16-inch table; one American drill press. 18 inch table; one 16-inch Pratt & Whitney lathe; one 18-inch LaBlond engine lathe; one French shaper, 18 inch stroke; one French 2-cylinder vertical engine, used for power for shop; one 2-cylinder horizontal air en-gine. used for operating hoisting device at coal chute; one 2-cylinder air engine. to op-erate sand shaker; one Dean duplex pump, 10 by 6 by 12; one forcing press 30 by 36-inch. with a capacity of .30 tons.

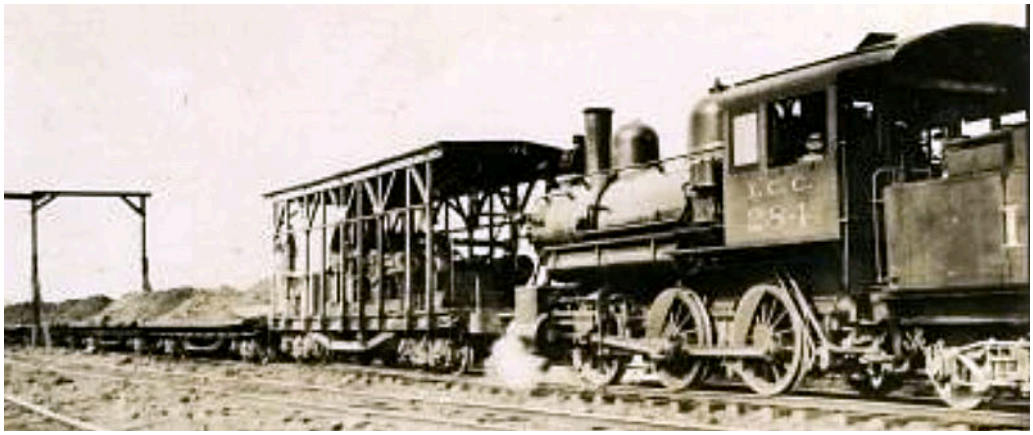
Since October 1, no engines have been hostled at Rio Grande. At the smaller hostling stations the machinery equipment is small. Heavy repairs to locomotives are made at Gorgona. The engines of the Pacific Division are hostled in the field at the Miraflores lock site. and those of the Atlantic Division are cared for at Gatun. In all there were 298 locomotives in the service of the Commission in September.

15.5.4 Appendix 4 The Lidgerwood spoil disposal system

This system relied on the winch taking its steam supply from a locomotive, and thus it merits some explanation here. "60 ton pull Lidgerwood steam winch pulls an 11' wide steel plow along the top of 40' wooden flat cars. The plow removes dirt piled on top of the cars. A steel apron was mounted on the end of each car to span the gap between them. Thus there was a continuous deck the full length of the train. One side of the car had a 12" to 15" extension of the deck. On the other side was a vertical side which was 36" high. The pulling cable, which had to be strong enough to stand up under the 60 ton pull of the winch, was shackled to the plow close to the vertical car side. The plow contained 3½ tons of concrete ballast along its cutting edge. The steam that powers the winch comes from the steam locomotive pulling the train. " Text from http://www.czimages.com/CZMemories/relocation/prrrl7.htm



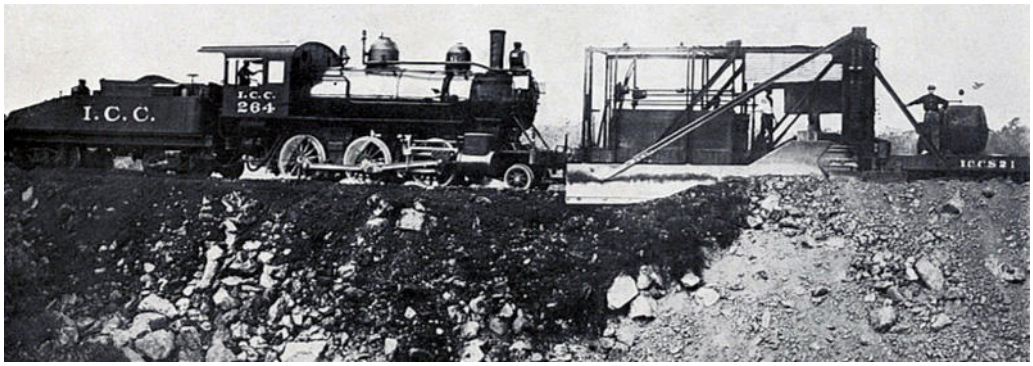
A typical Lidgerwood spoil car.



ICC 2-6-0 no. **284** at the rear of a train of loaded Lidgerwood flats, and showing the winch car that would have used a steam take-off from the engine's boiler. The gantry over the track may well have been that which was used to drag the winch cable back to the other end of the train before a loaded journey.

And a view of the 'Rapid unloader' winch car and loco from the opposite direction.

Two views showing the Lidgerwood plough being winched along the train from left to right, with the load of spoil falling alongside the track, from where it will be spread.



After the rapid unloading of the spoil, it then needed to be moved away from the track; hence the use of the spreader seen here pushed by 201 class 2-6-0 no. **264**.

“From the foregoing record of the great forces at work in loosening the rocks and earth in the path marked out for the canal, it will be readily seen that one of the most difficult problems to be solved by the canal engineers was that of speedily disposing of the excavated material. With drills, powder, steam shovels and dredges creating an ever-increasing mass to be removed, all the resources of American ingenuity were called upon for a rapid means of getting the debris out of the way as fast as powder loosened it and the machine shovels scooped it up. The original plan of the canal builders seems to have contemplated the use either of the old French type of dump car or standard railroad cars of gondola or platform type. This was soon abandoned for more efficient equipment, and a number of American firms began to supply machinery and cars for the removal of excavated material that quickly solved this difficult feature of canal construction.

One hundred million cubic yards of rock and earth had to be disposed of from the Culebra Cut alone. This means a mass of material 100 feet wide, 100 feet deep, and more than fifty miles long. It means nearly 5,000,000 carloads. Places had to be chosen where this enormous mass of spoil could be deposited, railroad tracks provided to get the cars to and from the dumps, and finally a means for the rapid unloading of the train of cars. What is known in the mechanical and scientific world as "The Lidgerwood System" was among the means chosen for this important work, and thirty " Rapid Unloaders" were purchased.

The Lidgerwood system consists of trains of flat cars, with steel aprons bridging the spaces between the cars, a plow to sweep the load from the cars, a steel cable reaching the length of the train, and the " Rapid Unloader," a powerful winding engine to draw the plow through the train. A long train can be unloaded in five minutes. The unloader is placed on a flat car coupled to the locomotive, and takes steam from the locomotive boiler. A train for unloading is made up with the locomotive and unloader attached to the head of the train, and with one of the regular Lidgerwood cars carrying the plow coupled to the rear. When the dump is reached the cable is attached to the plow, and the plow rapidly drawn along the cars, unloading earth and rock with a rapidity that is amazing.” [11 p358]

15.5.5 Baldwin erecting drawings for Panamanian locos available for purchase from the DeGolyer Library

Background

When the Baldwin works closed in 1956 C. W. Whitbeck was given permission to salvage what he could of the company's records and drawings. This was inevitably only a miniscule fraction of what had existed, but nevertheless is extremely valuable for researchers. Much of what he saved has now migrated to the DeGolyer Library of Southern Methodist University in Texas. Some is available online, whilst drawings and other items can be ordered.

Baldwin loco specification books

These hold a vast amount of information about individual batches of locos, though they were copied from microfilms which can make the identification of the appropriate pages more difficult – though not impossible – in some volumes. https://digitalcollections.smu.edu/digital/collection/rwy/id/32

Erecting drawings

About 4000 Baldwin general arrangement drawings are available – out of perhaps 50,000 or more. Lists – and other assets – can be found via https://txarchives.org/smu/finding_aids/00052.xml but note that it worth taking time to browse deeply, as the Txarchives and SMU libraries websites are not always easy to navigate.

Image services and permission to publish

https://www.smu.edu/libraries/degolyer/using/images

Reproduction fees

https://www.smu.edu/libraries/degolyer/using/images/usage-fees

Available drawings of Panamanian engines

Low-res copies of those available online are displayed at the relevant points in this file. Details of those drawings and others are displayed below to assist anyone wishing to order high-res copies.

Index no.	Dwg. no.	Road name	Road no.	Year	Baldwin class and no.		Wheels	Dwg. type & size	
467-68	6184	Changuinola (United Frait Co.)	**22**	1907	06-20D	31	0-6-0	SE/CS	3
467A-29	5833	ICC	**301-340**	1907	11902D	721-760	2-6-0	SE/CS	3
519-6	Tracing 1340	Universal Interoceanic Canal (*CUCI*)			08-00E		0-6-0	SE	4

15.6 Loco list by builders

Works	Year	Wheels	Gauge	Owner and number and name	Section
				ALCo	
38174	1905	2-6-4T	5' 0"	ICC **101**	15.1.3
38175	1905	2-6-4T	5' 0"	ICC **102**	15.1.3
38176	1905	2-6-4T	5' 0"	ICC **103**	15.1.3
38177	1905	2-6-4T	5' 0"	ICC **104**	15.1.3
38178	1905	2-6-4T	5' 0"	ICC **105**	15.1.3
38179	1905	2-6-4T	5' 0"	ICC **106**	15.1.3
38180	1905	2-6-4T	5' 0"	ICC **107**	15.1.3
38181	1905	2-6-4T	5' 0"	ICC **108**	15.1.3
38182	1905	2-6-4T	5' 0"	ICC **109**	15.1.3
38183	1905	2-6-4T	5' 0"	ICC **110**	15.1.3
38184	1905	2-6-4T	5' 0"	ICC **111**	15.1.3
38185	1905	2-6-4T	5' 0"	ICC **112**	15.1.3
38186	1905	2-6-4T	5' 0"	ICC **113**	15.1.3
38187	1905	2-6-4T	5' 0"	ICC **114**	15.1.3
38188	1905	2-6-4T	5' 0"	ICC **115**	15.1.3
38189	1905	2-6-4T	5' 0"	ICC **116**	15.1.3
38190	1905	2-6-4T	5' 0"	ICC **117**	15.1.3
38191	1905	2-6-4T	5' 0"	ICC **118**	15.1.3
38192	1905	2-6-4T	5' 0"	ICC **119**	15.1.3
38193	1905	2-6-4T	5' 0"	ICC **120**	15.1.3
38194	1905	2-6-4T	5' 0"	ICC **121**	15.1.3
38195	1905	2-6-4T	5' 0"	ICC **122**	15.1.3
38196	1905	2-6-4T	5' 0"	ICC **123**	15.1.3
38197	1905	2-6-4T	5' 0"	ICC **124**	15.1.3
39092	1906	2-6-0	5' 0"	ICC **201**	15.1.3
39093	1906	2-6-0	5' 0"	ICC **202**	15.1.3
39094	1906	2-6-0	5' 0"	ICC **203**	15.1.3
39095	1906	2-6-0	5' 0"	ICC **204**	15.1.3
39096	1906	2-6-0	5' 0"	ICC **205**	15.1.3
39097	1906	2-6-0	5' 0"	ICC **206**	15.1.3
39098	1906	2-6-0	5' 0"	ICC **207**	15.1.3
39099	1906	2-6-0	5' 0"	ICC **208**	15.1.3
39100	1906	2-6-0	5' 0"	ICC **209**	15.1.3
39101	1906	2-6-0	5' 0"	ICC **210**	15.1.3
39102	1906	2-6-0	5' 0"	ICC **211**	15.1.3
39103	1906	2-6-0	5' 0"	ICC **212**	15.1.3
39104	1906	2-6-0	5' 0"	ICC **213**	15.1.3
39105	1906	2-6-0	5' 0"	ICC **214**	15.1.3
39106	1906	2-6-0	5' 0"	ICC **215**	15.1.3
39107	1906	2-6-0	5' 0"	ICC **216**	15.1.3
39108	1906	2-6-0	5' 0"	ICC **217**	15.1.3
39109	1906	2-6-0	5' 0"	ICC **218**	15.1.3
39110	1906	2-6-0	5' 0"	ICC **219**	15.1.3

39111	1906	2-6-0	5' 0"	ICC **220**	15.1.3
39112	1906	2-6-0	5' 0"	ICC **221**	15.1.3
39113	1906	2-6-0	5' 0"	ICC **222**	15.1.3
39114	1906	2-6-0	5' 0"	ICC **223**	15.1.3
39115	1906	2-6-0	5' 0"	ICC **224**	15.1.3
39116	1906	2-6-0	5' 0"	ICC **225**	15.1.3
39117	1906	2-6-0	5' 0"	ICC **226**	15.1.3
39118	1906	2-6-0	5' 0"	ICC **227**	15.1.3
39119	1906	2-6-0	5' 0"	ICC **228**	15.1.3
39120	1906	2-6-0	5' 0"	ICC **229**	15.1.3
39121	1906	2-6-0	5' 0"	ICC **230**	15.1.3
39122	1906	2-6-0	5' 0"	ICC **601**	15.1.3
39123	1906	2-6-0	5' 0"	ICC **602**	15.1.3
39124	1906	2-6-0	5' 0"	ICC **603**	15.1.3
39125	1906	2-6-0	5' 0"	ICC **604**	15.1.3
39126	1906	2-6-0	5' 0"	ICC **605**	15.1.3
39127	1906	2-6-0	5' 0"	ICC **606**	15.1.3
39128	1906	2-6-0	5' 0"	ICC **607**	15.1.3
39129	1906	2-6-0	5' 0"	ICC **608**	15.1.3
39130	1906	2-6-0	5' 0"	ICC **609**	15.1.3
39131	1906	2-6-0	5' 0"	ICC **610**	15.1.3
39132	1906	2-6-0	5' 0"	ICC **611**	15.1.3
39133	1906	2-6-0	5' 0"	ICC **612**	15.1.3
39134	1906	2-6-0	5' 0"	ICC **613**	15.1.3
39135	1906	2-6-0	5' 0"	ICC **614**	15.1.3
39136	1906	2-6-0	5' 0"	ICC **615**	15.1.3
39137	1906	2-6-0	5' 0"	ICC **616**	15.1.3
39138	1906	2-6-0	5' 0"	ICC **617**	15.1.3
39139	1906	2-6-0	5' 0"	ICC **618**	15.1.3
39140	1906	2-6-0	5' 0"	ICC **619**	15.1.3
39141	1906	2-6-0	5' 0"	ICC **620**	15.1.3
39142	1906	2-6-0	5' 0"	ICC **231**	15.1.3
39143	1906	2-6-0	5' 0"	ICC **232**	15.1.3
39144	1906	2-6-0	5' 0"	ICC **233**	15.1.3
39145	1906	2-6-0	5' 0"	ICC **234**	15.1.3
39146	1906	2-6-0	5' 0"	ICC **235**	15.1.3
39147	1906	2-6-0	5' 0"	ICC **236**	15.1.3
39148	1906	2-6-0	5' 0"	ICC **237**	15.1.3
39149	1906	2-6-0	5' 0"	ICC **238**	15.1.3
39150	1906	2-6-0	5' 0"	ICC **239**	15.1.3
39151	1906	2-6-0	5' 0"	ICC **240**	15.1.3
39152	1906	2-6-0	5' 0"	ICC **241**	15.1.3
39153	1906	2-6-0	5' 0"	ICC **242**	15.1.3
39154	1906	2-6-0	5' 0"	ICC **243**	15.1.3
39155	1906	2-6-0	5' 0"	ICC **244**	15.1.3
39156	1906	2-6-0	5' 0"	ICC **245**	15.1.3
39157	1906	2-6-0	5' 0"	ICC **246**	15.1.3
39158	1906	2-6-0	5' 0"	ICC **247**	15.1.3

39159	1906	2-6-0	5' 0"	ICC **248**	15.1.3
39160	1906	2-6-0	5' 0"	ICC **249**	15.1.3
39161	1906	2-6-0	5' 0"	ICC **250**	15.1.3
39162	1906	2-6-0	5' 0"	ICC **251**	15.1.3
39163	1906	2-6-0	5' 0"	ICC **252**	15.1.3
39164	1906	2-6-0	5' 0"	ICC **253**	15.1.3
39165	1906	2-6-0	5' 0"	ICC **254**	15.1.3
39166	1906	2-6-0	5' 0"	ICC **255**	15.1.3
39167	1906	2-6-0	5' 0"	ICC **256**	15.1.3
39168	1906	2-6-0	5' 0"	ICC **257**	15.1.3
39169	1906	2-6-0	5' 0"	ICC **258**	15.1.3
39170	1906	2-6-0	5' 0"	ICC **259**	15.1.3
39171	1906	2-6-0	5' 0"	ICC **260**	15.1.3
39172	1906	2-6-0	5' 0"	ICC **261**	15.1.3
39173	1906	2-6-0	5' 0"	ICC **262**	15.1.3
39174	1906	2-6-0	5' 0"	ICC **263**	15.1.3
39175	1906	2-6-0	5' 0"	ICC **264**	15.1.3
39176	1906	2-6-0	5' 0"	ICC **265**	15.1.3
39177	1906	2-6-0	5' 0"	ICC **266**	15.1.3
39178	1906	2-6-0	5' 0"	ICC **267**	15.1.3
39179	1906	2-6-0	5' 0"	ICC **268**	15.1.3
39180	1906	2-6-0	5' 0"	ICC **269**	15.1.3
39181	1906	2-6-0	5' 0"	ICC **270**	15.1.3
39182	1906	2-6-0	5' 0"	ICC **271**	15.1.3
39183	1906	2-6-0	5' 0"	ICC **272**	15.1.3
39184	1906	2-6-0	5' 0"	ICC **273**	15.1.3
39185	1906	2-6-0	5' 0"	ICC **274**	15.1.3
39186	1906	2-6-0	5' 0"	ICC **275**	15.1.3
39187	1906	2-6-0	5' 0"	ICC **276**	15.1.3
39188	1906	2-6-0	5' 0"	ICC **277**	15.1.3
39189	1906	2-6-0	5' 0"	ICC **278**	15.1.3
39190	1906	2-6-0	5' 0"	ICC **279**	15.1.3
39191	1906	2-6-0	5' 0"	ICC **280**	15.1.3
39192	1906	2-6-0	5' 0"	ICC **281**	15.1.3
39193	1906	2-6-0	5' 0"	ICC **282**	15.1.3
39194	1906	2-6-0	5' 0"	ICC **283**	15.1.3
39195	1906	2-6-0	5' 0"	ICC **284**	15.1.3
39196	1906	2-6-0	5' 0"	ICC **285**	15.1.3
39197	1906	2-6-0	5' 0"	ICC **286**	15.1.3
39198	1906	2-6-0	5' 0"	ICC **287**	15.1.3
39199	1906	2-6-0	5' 0"	ICC **288**	15.1.3
39200	1906	2-6-0	5' 0"	ICC **289**	15.1.3
39201	1906	2-6-0	5' 0"	ICC **290**	15.1.3
39202	1906	2-6-0	5' 0"	ICC **291**	15.1.3
39203	1906	2-6-0	5' 0"	ICC **292**	15.1.3
39204	1906	2-6-0	5' 0"	ICC **293**	15.1.3
39205	1906	2-6-0	5' 0"	ICC **294**	15.1.3
39206	1906	2-6-0	5' 0"	ICC **295**	15.1.3

39207	1906	2-6-0	5' 0"	ICC **296**	15.1.3
39208	1906	2-6-0	5' 0"	ICC **297**	15.1.3
39209	1906	2-6-0	5' 0"	ICC **298**	15.1.3
39210	1906	2-6-0	5' 0"	ICC **299**	15.1.3
39211	1906	2-6-0	5' 0"	ICC **300**	15.1.3
45845	1908	2-6-0	5' 0"	ICC **651**	15.1.3
45846	1908	2-6-0	5' 0"	ICC **652**	15.1.3
45847	1908	2-6-0	5' 0"	ICC **653**	15.1.3
45848	1908	2-6-0	5' 0"	ICC **654**	15.1.3
45849	1908	2-6-0	5' 0"	ICC **655**	15.1.3
45850	1908	2-6-0	5' 0"	ICC **656**	15.1.3
45851	1908	2-6-0	5' 0"	ICC **657**	15.1.3
45852	1908	2-6-0	5' 0"	ICC **658**	15.1.3
45853	1908	2-6-0	5' 0"	ICC **659**	15.1.3
45854	1908	2-6-0	5' 0"	ICC **660**	15.1.3
45855	1908	2-6-0	5' 0"	ICC **661**	15.1.3
45856	1908	2-6-0	5' 0"	ICC **662**	15.1.3
55028	1915	2-8-0	3' 0"	*FCN de Chiriqu*i **1**	15.3.3
55098	1915	2-8-0	3' 0"	*FCN de Chiriqu*i **2**	15.3.3
68727	1936	2-8-0	3' 0"	*FCN de Chiriqu*i **4**	15.3.3
69287	1940	2-6-0	5' 0"	ICC **701**	15.1.3
69288	1940	2-6-0	5' 0"	ICC **702**	15.1.3
69289	1940	2-6-0	5' 0"	ICC **703**	15.1.3
69290	1940	2-6-0	5' 0"	ICC **704**	15.1.3
69291	1940	2-6-0	5' 0"	ICC **705**	15.1.3

Baldwin

160	1842	4-2-0	Std.?	Panama RR **'PERKIOMEN'**	15.1.1
4920	1880	4-4-0	5' 0"	Panama RR **22 '?'**	15.1.1
4923	1880	4-4-0	5' 0"	Panama RR **23 '?'**	15.1.1
5330	1880	0-4-0T	5' 0"	Panama RR **24 '?'**	15.1.1
6247	1882	0-4-0T	5' 0"	Panama RR **25 '?'**	15.1.1
6492	1882	4-4-0	5' 0"	Panama RR **26 '?'**	15.1.1
6493	1882	4-4-0	5' 0"	Panama RR **27 '?'**	15.1.1
6852	1883	0-4-0T	5' 0"	Panama RR **28 '?'**	15.1.1
6890	1882	4-4-0	5' 0"	Panama RR **29 '?'**	15.1.1
6923	1882	4-4-0	5' 0"	Panama RR **30 '?'**	15.1.1
7248	1884	0-4-0T	5' 0"	Panama RR **31 '?'**	15.1.1
8859	1887	0-4-0T	5' 0"	Panama RR **? '?'**	15.1.1
23786	1904	2-8-0	3' 0"	UFCo. Banes RR in Cuba **12**, later to *FCN de Chiriqu*i **3**	15.3.3
30051	1907	2-6-0	5' 0"	ICC **301**	15.1.3
30052	1907	2-6-0	5' 0"	ICC **302**	15.1.3
30053	1907	2-6-0	5' 0"	ICC **303**	15.1.3
30054	1907	2-6-0	5' 0"	ICC **304**	15.1.3
30055	1907	2-6-0	5' 0"	ICC **305**	15.1.3
30056	1907	2-6-0	5' 0"	ICC **306**	15.1.3
30121	1907	2-6-0	5' 0"	ICC **307**	15.1.3
30122	1907	2-6-0	5' 0"	ICC **308**	15.1.3

30123	1907	2-6-0	5' 0"	ICC **309**	15.1.3
30124	1907	2-6-0	5' 0"	ICC **310**	15.1.3
30141	1907	2-6-0	5' 0"	ICC **311**	15.1.3
30142	1907	2-6-0	5' 0"	ICC **312**	15.1.3
30143	1907	2-6-0	5' 0"	ICC **313**	15.1.3
30144	1907	2-6-0	5' 0"	ICC **314**	15.1.3
30145	1907	2-6-0	5' 0"	ICC **315**	15.1.3
30146	1907	2-6-0	5' 0"	ICC **316**	15.1.3
30147	1907	2-6-0	5' 0"	ICC **317**	15.1.3
30187	1907	2-6-0	5' 0"	ICC **318**	15.1.3
30188	1907	2-6-0	5' 0"	ICC **319**	15.1.3
30189	1907	2-6-0	5' 0"	ICC **320**	15.1.3
30190	1907	2-6-0	5' 0"	ICC **321**	15.1.3
30213	1907	2-6-0	5' 0"	ICC **322**	15.1.3
30214	1907	2-6-0	5' 0"	ICC **323**	15.1.3
30215	1907	2-6-0	5' 0"	ICC **324**	15.1.3
30217	1907	2-6-0	5' 0"	ICC **325**	15.1.3
30218	1907	2-6-0	5' 0"	ICC **326**	15.1.3
30219	1907	2-6-0	5' 0"	ICC **327**	15.1.3
30220	1907	2-6-0	5' 0"	ICC **328**	15.1.3
30259	1907	2-6-0	5' 0"	ICC **329**	15.1.3
30260	1907	2-6-0	5' 0"	ICC **330**	15.1.3
30261	1907	2-6-0	5' 0"	ICC **331**	15.1.3
30262	1907	2-6-0	5' 0"	ICC **332**	15.1.3
30263	1907	2-6-0	5' 0"	ICC **333**	15.1.3
30273	1907	2-6-0	5' 0"	ICC **334**	15.1.3
30274	1907	2-6-0	5' 0"	ICC **335**	15.1.3
30275	1907	2-6-0	5' 0"	ICC **336**	15.1.3
30276	1907	2-6-0	5' 0"	ICC **337**	15.1.3
30277	1907	2-6-0	5' 0"	ICC **338**	15.1.3
30313	1907	2-6-0	5' 0"	ICC **339**	15.1.3
30314	1907	2-6-0	5' 0"	ICC **340**	15.1.3
32551	1908	2-6-0	3' 0"	United Fruit Co. **22**[1], later to Central Union in Cuba **3**	15.3.1
32737	1908	0-6-0	3' 0"	United Fruit Co. **22**[2]	15.3.1

Cail

2295-2321	1889	2-6-0T	Metre	Ordered by the CUCI but not delivered. Went to *Soc. d'Entreprise des Colonies Espagnoles in Puerto Rico*	15.2.2

Climax

?	192?	0-4-4-0T	3' 0"	Panama American Lumber Development Co. **?**	15.3.6

Cockerill

1436	1885	0-6-0T	5' 0"	*CUCI* **63**	15.1.2
1437	1885	0-6-0T	5' 0"	*CUCI* **64**	15.1.2
1438	1885	0-6-0T	5' 0"	*CUCI* **65**	15.1.2
1439	1885	0-6-0T	5' 0"	*CUCI* **66**	15.1.2
1440	1885	0-6-0T	5' 0"	*CUCI* **67**	15.1.2

1441	1885	0-6-0T	5' 0"	*CUCI* **68**	15.1.2
1442	1885	0-6-0T	5' 0"	*CUCI* **69**	15.1.2
1443	1885	0-6-0T	5' 0"	*CUCI* **70**	15.1.2
1444	1885	0-6-0T	5' 0"	*CUCI* **71**	15.1.2
1445	1885	0-6-0T	5' 0"	*CUCI* **72**	15.1.2
1446	1885	0-6-0T	5' 0"	*CUCI* **73**	15.1.2
1447	1885	0-6-0T	5' 0"	*CUCI* **74**	15.1.2
1448	1885	0-6-0T	5' 0"	*CUCI* **75**	15.1.2
1449	1885	0-6-0T	5' 0"	*CUCI* **76**	15.1.2
1450	1885	0-6-0T	5' 0"	*CUCI* **77**	15.1.2
1517	1887	0-6-0T	5' 0"	*CUCI* **202**	15.1.2
1518	1887	0-6-0T	5' 0"	*CUCI* **203**	15.1.2
1519	1887	0-6-0T	5' 0"	*CUCI* **204**	15.1.2
1520	1887	0-6-0T	5' 0"	*CUCI* **205**	15.1.2
1521	1887	0-6-0T	5' 0"	*CUCI* **206**	15.1.2
1522	1887	0-6-0T	5' 0"	*CUCI* **207**	15.1.2
1523	1887	0-6-0T	5' 0"	*CUCI* **208**	15.1.2
1524	1887	0-6-0T	5' 0"	*CUCI* **209**	15.1.2
1525	1887	0-6-0T	5' 0"	*CUCI* **210**	15.1.2
1526	1887	0-6-0T	5' 0"	*CUCI* **211**	15.1.2
1527	1887	0-6-0T	5' 0"	*CUCI* **212**	15.1.2
1528	1887	0-6-0T	5' 0"	*CUCI* **213**	15.1.2

Cooke

1519	1883	4-4-0	5' 0"	Panama RR **41 '?'**	15.1.2
1520	1883	4-4-0	5' 0"	Panama RR **42 '?'**	15.1.2
1521	1883	4-4-0	5' 0"	Panama RR **43 '?'**	15.1.2
1522	1883	4-4-0	5' 0"	Panama RR **44 '?'**	15.1.2
1523	1883	4-4-0	5' 0"	Panama RR **45 '?'**	15.1.2
1524	1883	4-4-0	5' 0"	Panama RR **46 'TOULON'**	15.1.2
1525	1883	4-4-0	5' 0"	Panama RR **47 '?'**	15.1.2
1526	1883	4-4-0	5' 0"	Panama RR **48 '?'**	15.1.2
1527	1883	4-4-0	5' 0"	Panama RR **49 '?'**	15.1.2
1528	1883	4-4-0	5' 0"	Panama RR **50 '?'**	15.1.2
1529	1883	4-4-0	5' 0"	Panama RR **51 'Le MANS'**	15.1.2
1530	1883	4-4-0	5' 0"	Panama RR **52 '?'**	15.1.2
1531	1883	4-4-0	5' 0"	Panama RR **53 '?'**	15.1.2
1532	1883	4-4-0	5' 0"	Panama RR **54 '?'**	15.1.2
1533	1883	4-4-0	5' 0"	Panama RR **55 '?'**	15.1.2
1534	1883	4-4-0	5' 0"	Panama RR **56 '?'**	15.1.2
1535	1883	4-4-0	5' 0"	Panama RR **57 '?'**	15.1.2

Couillet

587	1881	0-6-0T	5' 0"	*CUCI* **17**	15.1.2
588	1881	0-6-0T	5' 0"	*CUCI* **18**	15.1.2
589	1881	0-6-0T	5' 0"	*CUCI* **19**	15.1.2
590	1881	0-6-0T	5' 0"	*CUCI* **20**	15.1.2
591	1881	0-6-0T	5' 0"	*CUCI* **21**	15.1.2

592	1881	0-6-0T	5' 0"	*CUCI* **22**	15.1.2
629	1881	0-6-0T	5' 0"	*CUCI* **33**	15.1.2
630	1881	0-6-0T	5' 0"	*CUCI* **34**	15.1.2
631	1881	0-6-0T	5' 0"	*CUCI* **35**	15.1.2
632	1881	0-6-0T	5' 0"	*CUCI* **36**	15.1.2
633	1881	0-6-0T	5' 0"	*CUCI* **37**	15.1.2
634	1881	0-6-0T	5' 0"	*CUCI* **38**	15.1.2
635	1881	0-6-0T	5' 0"	*CUCI* **39**	15.1.2
636	1881	0-6-0T	5' 0"	*CUCI* **40**	15.1.2
637	1881	0-6-0T	5' 0"	*CUCI* **41**	15.1.2
638	1881	0-6-0T	5' 0"	*CUCI* **42**	15.1.2
702	1883	0-6-0T	5' 0"	*CUCI* **53**	15.1.2
703	1883	0-6-0T	5' 0"	*CUCI* **54**	15.1.2
704	1883	0-6-0T	5' 0"	*CUCI* **55**	15.1.2
705	1883	0-6-0T	5' 0"	*CUCI* **56**	15.1.2
706	1883	0-6-0T	5' 0"	*CUCI* **57**	15.1.2
707	1883	0-6-0T	5' 0"	*CUCI* **58**	15.1.2
708	1883	0-6-0T	5' 0"	*CUCI* **59**	15.1.2
709	1883	0-6-0T	5' 0"	*CUCI* **60**	15.1.2
710	1883	0-6-0T	5' 0"	*CUCI* **61**	15.1.2
711	1883	0-6-0T	5' 0"	*CUCI* **62**	15.1.2

Davenport

763	1907	0-4-0ST	3' 0"	ICC for Miraflores spillway construction **801**	15.2.2
764	1907	0-4-0ST	3' 0"	ICC for Miraflores spillway construction **802**	15.2.2
765	1907	0-4-0ST	3' 0"	ICC for Miraflores spillway construction **803**	15.2.2
766	1907	0-4-0ST	3' 0"	ICC for Miraflores spillway construction **804**	15.2.2

Franco-Belge

373	1881	0-6-0T	5' 0"	*CUCI* **1**	15.1.2
374	1881	0-6-0T	5' 0"	*CUCI* **2**	15.1.2
375	1881	0-6-0T	5' 0"	*CUCI* **3**	15.1.2
376	1881	0-6-0T	5' 0"	*CUCI* **4**	15.1.2
377	1881	0-6-0T	5' 0"	*CUCI* **5**	15.1.2
378	1881	0-6-0T	5' 0"	*CUCI* **6**	15.1.2
379	1881	0-6-0T	5' 0"	*CUCI* **7**	15.1.2
380	1881	0-6-0T	5' 0"	*CUCI* **8**	15.1.2
381	1881	0-6-0T	5' 0"	*CUCI* **9**	15.1.2
382	1881	0-6-0T	5' 0"	*CUCI* **10**	15.1.2
407	1882	0-6-0T	5' 0"	*CUCI* **11**	15.1.2
408	1882	0-6-0T	5' 0"	*CUCI* **12**	15.1.2
409	1882	0-6-0T	5' 0"	*CUCI* **13**	15.1.2
410	1882	0-6-0T	5' 0"	*CUCI* **14**	15.1.2
411	1882	0-6-0T	5' 0"	*CUCI* **15**	15.1.2
412	1882	0-6-0T	5' 0"	*CUCI* **16**	15.1.2
447	1882	0-6-0T	5' 0"	*CUCI* **23**	15.1.2
448	1882	0-6-0T	5' 0"	*CUCI* **24**	15.1.2
449	1882	0-6-0T	5' 0"	*CUCI* **25**	15.1.2

450	1882	0-6-0T	5' 0"	*CUCI* **26**	15.1.2
451	1882	0-6-0T	5' 0"	*CUCI* **27**	15.1.2
452	1882	0-6-0T	5' 0"	*CUCI* **28**	15.1.2
453	1882	0-6-0T	5' 0"	*CUCI* **29**	15.1.2
454	1882	0-6-0T	5' 0"	*CUCI* **30**	15.1.2
455	1882	0-6-0T	5' 0"	*CUCI* **31**	15.1.2
456	1882	0-6-0T	5' 0"	*CUCI* **32**	15.1.2
466	1883	0-6-0T	5' 0"	*CUCI* **43**	15.1.2
467	1883	0-6-0T	5' 0"	*CUCI* **44**	15.1.2
468	1883	0-6-0T	5' 0"	*CUCI* **45**	15.1.2
469	1883	0-6-0T	5' 0"	*CUCI* **46**	15.1.2
470	1883	0-6-0T	5' 0"	*CUCI* **47**	15.1.2
471	1883	0-6-0T	5' 0"	*CUCI* **48**	15.1.2
472	1883	0-6-0T	5' 0"	*CUCI* **49**	15.1.2
473	1883	0-6-0T	5' 0"	*CUCI* **50**	15.1.2
474	1883	0-6-0T	5' 0"	*CUCI* **51**	15.1.2
475	1883	0-6-0T	5' 0"	*CUCI* **52**	15.1.2
483	1883	0-4-0WT	500mm	CUCI **?** later ICC **?**	15.2.1
484	1883	0-4-0WT	500mm	CUCI **?** later ICC **?**	15.2.1
510	1884	0-4-0WT	500mm	CUCI **?** later ICC **01**	15.2.1
511	1884	0-4-0WT	500mm	CUCI **?** later ICC **02**	15.2.1
512	1884	0-4-0WT	500mm	CUCI **?** later ICC **03**	15.2.1
513	1884	0-4-0WT	500mm	CUCI **?** later ICC **04**	15.2.1
514	1884	0-4-0WT	500mm	CUCI **?** later ICC **05**	15.2.1
515	1884	0-4-0WT	500mm	CUCI **?** later ICC **06**	15.2.1
516	1884	0-4-0WT	500mm	CUCI **?** later ICC **07**	15.2.1
517	1884	0-4-0WT	500mm	CUCI **?** later ICC **08**	15.2.1
518	1884	0-4-0WT	500mm	CUCI **?** later ICC **09**	15.2.1
519	1884	0-4-0WT	500mm	CUCI **?** later ICC **010**	15.2.1
528	1885	0-6-0T	5' 0"	*CUCI* **91**	15.1.2
529	1885	0-6-0T	5' 0"	*CUCI* **92**	15.1.2
530	1885	0-6-0T	5' 0"	*CUCI* **93**	15.1.2
531	1885	0-6-0T	5' 0"	*CUCI* **94**	15.1.2
532	1885	0-6-0T	5' 0"	*CUCI* **95**	15.1.2
533	1885	0-6-0T	5' 0"	*CUCI* **96**	15.1.2
534	1885	0-6-0T	5' 0"	*CUCI* **97**	15.1.2
535	1885	0-6-0T	5' 0"	*CUCI* **98**	15.1.2
536	1885	0-6-0T	5' 0"	*CUCI* **99**	15.1.2
537	1885	0-6-0T	5' 0"	*CUCI* **100**	15.1.2
538	1885	0-6-0T	5' 0"	*CUCI* **101**	15.1.2
539	1885	0-6-0T	5' 0"	*CUCI* **102**	15.1.2
540	1885	0-6-0T	5' 0"	*CUCI* **103**	15.1.2
541	1885	0-6-0T	5' 0"	*CUCI* **104**	15.1.2
542	1885	0-6-0T	5' 0"	*CUCI* **105**	15.1.2
543	1885	0-6-0T	5' 0"	*CUCI* **106**	15.1.2
544	1885	0-6-0T	5' 0"	*CUCI* **107**	15.1.2
545	1885	0-6-0T	5' 0"	*CUCI* **108**	15.1.2
546	1885	0-6-0T	5' 0"	*CUCI* **109**	15.1.2

547	1885	0-6-0T	5' 0"	*CUCI* **110**	15.1.2
548	1885	0-6-0T	5' 0"	*CUCI* **111**	15.1.2
549	1885	0-6-0T	5' 0"	*CUCI* **112**	15.1.2
550	1885	0-6-0T	5' 0"	*CUCI* **113**	15.1.2
551	1885	0-6-0T	5' 0"	*CUCI* **114**	15.1.2
552	1885	0-6-0T	5' 0"	*CUCI* **115**	15.1.2
553	1885	0-6-0T	5' 0"	*CUCI* **116**	15.1.2
554	1885	0-6-0T	5' 0"	*CUCI* **117**	15.1.2
555	1885	0-6-0T	5' 0"	*CUCI* **118**	15.1.2
556	1885	0-6-0T	5' 0"	*CUCI* **119**	15.1.2
557	1885	0-6-0T	5' 0"	*CUCI* **120**	15.1.2
565	1886	0-6-0T	5' 0"	*CUCI* **121**	15.1.2
566	1886	0-6-0T	5' 0"	*CUCI* **122**	15.1.2
567	1886	0-6-0T	5' 0"	*CUCI* **123**	15.1.2
568	1886	0-6-0T	5' 0"	*CUCI* **124**	15.1.2
569	1886	0-6-0T	5' 0"	*CUCI* **125**	15.1.2
570	1886	0-6-0T	5' 0"	*CUCI* **126**	15.1.2
571	1886	0-6-0T	5' 0"	*CUCI* **127**	15.1.2
572	1886	0-6-0T	5' 0"	*CUCI* **128**	15.1.2
573	1886	0-6-0T	5' 0"	*CUCI* **129**	15.1.2
574	1886	0-6-0T	5' 0"	*CUCI* **130**	15.1.2
575	1886	0-6-0T	5' 0"	*CUCI* **131**	15.1.2
576	1886	0-6-0T	5' 0"	*CUCI* **132**	15.1.2
577	1886	0-6-0T	5' 0"	*CUCI* **133**	15.1.2
578	1886	0-6-0T	5' 0"	*CUCI* **134**	15.1.2
579	1886	0-6-0T	5' 0"	*CUCI* **135**	15.1.2
580	1886	0-6-0T	5' 0"	*CUCI* **136**	15.1.2
581	1886	0-6-0T	5' 0"	*CUCI* **137**	15.1.2
582	1886	0-6-0T	5' 0"	*CUCI* **138**	15.1.2
583	1886	0-6-0T	5' 0"	*CUCI* **139**	15.1.2
584	1886	0-6-0T	5' 0"	*CUCI* **140**	15.1.2
585	1886	0-6-0T	5' 0"	*CUCI* **141**	15.1.2
586	1886	0-6-0T	5' 0"	*CUCI* **142**	15.1.2
587	1886	0-6-0T	5' 0"	*CUCI* **143**	15.1.2
588	1886	0-6-0T	5' 0"	*CUCI* **144**	15.1.2
589	1886	0-6-0T	5' 0"	*CUCI* **145**	15.1.2
616	1886	0-6-0T	5' 0"	*CUCI* **146**	15.1.2
617	1886	0-6-0T	5' 0"	*CUCI* **147**	15.1.2
618	1886	0-6-0T	5' 0"	*CUCI* **148**	15.1.2
619	1886	0-6-0T	5' 0"	*CUCI* **149**	15.1.2
620	1886	0-6-0T	5' 0"	*CUCI* **150**	15.1.2
621	1886	0-6-0T	5' 0"	*CUCI* **151**	15.1.2
622	1886	0-6-0T	5' 0"	*CUCI* **152**	15.1.2
623	1886	0-6-0T	5' 0"	*CUCI* **153**	15.1.2
624	1886	0-6-0T	5' 0"	*CUCI* **154**	15.1.2
625	1886	0-6-0T	5' 0"	*CUCI* **155**	15.1.2
626	1886	0-6-0T	5' 0"	*CUCI* **156**	15.1.2
627	1886	0-6-0T	5' 0"	*CUCI* **157**	15.1.2

628	1886	0-6-0T	5' 0"	*CUCI* **158**	15.1.2
629	1886	0-6-0T	5' 0"	*CUCI* **159**	15.1.2
630	1886	0-6-0T	5' 0"	*CUCI* **160**	15.1.2
631	1886	0-6-0T	5' 0"	*CUCI* **161**	15.1.2
632	1886	0-6-0T	5' 0"	*CUCI* **162**	15.1.2
633	1886	0-6-0T	5' 0"	*CUCI* **163**	15.1.2
634	1886	0-6-0T	5' 0"	*CUCI* **164**	15.1.2
635	1886	0-6-0T	5' 0"	*CUCI* **165**	15.1.2
636	1886	0-6-0T	5' 0"	*CUCI* **166**	15.1.2
637	1887	0-6-0T	5' 0"	*CUCI* **177**	15.1.2
638	1887	0-6-0T	5' 0"	*CUCI* **178**	15.1.2
639	1887	0-6-0T	5' 0"	*CUCI* **179**	15.1.2
640	1887	0-6-0T	5' 0"	*CUCI* **180**	15.1.2
641	1887	0-6-0T	5' 0"	*CUCI* **181**	15.1.2
642	1887	0-6-0T	5' 0"	*CUCI* **182**	15.1.2
643	1887	0-6-0T	5' 0"	*CUCI* **183**	15.1.2
644	1887	0-6-0T	5' 0"	*CUCI* **184**	15.1.2
645	1887	0-6-0T	5' 0"	*CUCI* **185**	15.1.2
646	1887	0-6-0T	5' 0"	*CUCI* **186**	15.1.2
647	1887	0-6-0T	5' 0"	*CUCI* **187**	15.1.2
648	1887	0-6-0T	5' 0"	*CUCI* **188**	15.1.2
649	1887	0-6-0T	5' 0"	*CUCI* **189**	15.1.2
650	1887	0-6-0T	5' 0"	*CUCI* **190**	15.1.2
651	1887	0-6-0T	5' 0"	*CUCI* **191**	15.1.2
652	1887	0-6-0T	5' 0"	*CUCI* **192**	15.1.2
653	1887	0-6-0T	5' 0"	*CUCI* **193**	15.1.2
654	1887	0-6-0T	5' 0"	*CUCI* **194**	15.1.2
655	1887	0-6-0T	5' 0"	*CUCI* **195**	15.1.2
656	1887	0-6-0T	5' 0"	*CUCI* **196**	15.1.2
657	1887	0-6-0T	5' 0"	*CUCI* **197**	15.1.2
658	1887	0-6-0T	5' 0"	*CUCI* **198**	15.1.2
659	1887	0-6-0T	5' 0"	*CUCI* **199**	15.1.2
660	1887	0-6-0T	5' 0"	*CUCI* **200**	15.1.2
661	1887	0-6-0T	5' 0"	*CUCI* **201**	15.1.2
664	1885	0-4-0WT	500mm	CUCI **?** later ICC **?**	15.2.1
665	1885	0-4-0WT	500mm	CUCI **?** later ICC **?**	15.2.1

Hinkley

1584	1882	0-6-0ST	5' 0"	Panama RR **5 'A. RECLUS'** later **5 '?'**	15.1.2
1585	1882	0-6-0ST	5' 0"	Panama RR **6 'L. VERBRUGGE'** later **6 '?'**	15.1.2
1586	1882	0-6-0ST	5' 0"	Panama RR **7 'MARNE'**	15.1.2
1587	1882	0-6-0ST	5' 0"	Panama RR **8 'EURE'**	15.1.2
1568	1883	0-6-0ST	5' 0"	Panama RR **11 'MEURTHE'**	15.1.2

New Castle Manufacturing Co.

?	1842	4-4-0	Std.?	Panama RR **'POTTSVILLE'**	15.1.1

Niles & Co.

?	185?	4-4-0	5' 6"?	Panama RR **'?'**	15.1.1
?	185?	4-4-0	5' 6"?	Panama RR **'?'**	15.1.1
?	185?	4-4-0	5' 6"?	Panama RR **'?'**	15.1.1
?	185?	4-4-0	5' 6"?	Panama RR **'?'**	15.1.1
?	185?	4-4-0	5' 6"?	Panama RR **'?'**	15.1.1
?	185?	4-4-0	5' 6"?	Panama RR **'?'**	15.1.1
?	185?	4-4-0	5' 6"?	Panama RR **'?'**	15.1.1

Porter

540	1883	0-4-2ST	5' 0"	Panama RR **9 'SOMME'**	15.1.2
550	1883	0-4-2ST	5' 0"	Panama RR **10 'SAONE'**	15.1.2
696	1885	0-4-2ST	5' 0"	Panama R R **53 'La TOUCQUES'**	15.1.2
697	1885	0-4-2ST	5' 0"	Panama RR **59 'La UANNE'**	15.1.2
701	1885	0-4-2ST	5' 0"	Panama RR **60 'La BIEURRE'**	15.1.2
702	1885	0-4-2ST	5' 0"	Panama RR **61 'La DHUIS'**	15.1.2
708	1885	0-4-2ST	5' 0"	Panama RR **62 'La LOING'**	15.1.2
709	1885	0-4-2ST	5' 0"	Panama RR **63 'L'OUREY'**	15.1.2
1894	1898	0-4-2ST	3' 0"	Snyder Banana of Alabama **1**, then to United Fruit Co., Bocas del Toro, Panama **?**	15.3.1
1895	1898	0-4-2ST	3' 0"	Snyder Banana of Alabama **2**, then to United Fruit Co., Bocas del Toro, Panama **?**	15.3.1
2015	1899	0-4-S2T	3' 0"	Snyder Banana of Alabama **3**, then to United Fruit Co., Bocas del Toro, Panama **?**	15.3.1
2016	1899	0-4-2ST	3' 0"	Snyder Banana of Alabama **4**, then to United Fruit Co., Bocas del Toro, Panama **?**	15.3.1
2102	1899	0-4-2ST	3' 0"	Snyder Banana of Alabama **5**, then to United Fruit Co., Bocas del Toro, Panama **?**	15.3.1
2265	1901	2-8-0	3' 0"	United Fruit Co., Bocas del Toro, Panama **?**	15.3.1
3054	1904	2-6-0	3' 0"	United Fruit Co. **9**	15.3.1
3086	1904	2-6-0	3' 0"	United Fruit Co. Chanquinda? **10**	15.3.1
3433	1906	2-6-0	3' 0"	United Fruit Co. Chanquirola RR **11**	15.3.1
3434	1906	2-6-0	3' 0"	United Fruit Co. Chanquirola RR **12**	15.3.1
3830	1907	2-6-0	3' 0"	United Fruit Co. **14**	15.3.1
3831	1907	2-6-0	3' 0"	United Fruit Co. **15**	15.3.1
3980	1907	2-6-0	3' 0"	United Fruit Co. Chanquirola RR **16**	15.3.1
3981	1907	2-6-0	3' 0"	United Fruit Co. Chanquirola RR **17**	15.3.1
4087	1907	2-6-0	3' 0"	United Fruit Co. **18**	15.3.1
4088	1907	2-6-0	3' 0"	United Fruit Co. **19**	15.3.1
4089	1907	2-6-0	3' 0"	United Fruit Co. **20**	15.3.1
4090	1907	2-6-0	3' 0"	United Fruit Co. **21**	15.3.1
4217	1908	0-6-0ST	3' 0"	ICC **871**	15.2.3
4218	1908	0-6-0ST	3' 0"	ICC **872**	15.2.3
4219	1908	0-6-0ST	3' 0"	ICC **873**	15.2.3
4220	1908	0-6-0ST	3' 0"	ICC **874**	15.2.3
4221	1908	0-6-0ST	3' 0"	ICC **875**	15.2.3
4222	1908	0-6-0ST	3' 0"	ICC **876**	15.2.3
4223	1908	0-6-0ST	3' 0"	ICC **877**	15.2.3
4224	1908	0-6-0ST	3' 0"	ICC **878**	15.2.3

4225	1908	0-6-0ST	3' 0"	ICC **879**	15.2.3
4226	1908	0-6-0ST	3' 0"	ICC **880**	15.2.3
4232	1908	2-6-0	3' 0"	United Fruit Co. **23**	15.3.1
4233	1908	2-6-0	3' 0"	United Fruit Co. **24**	15.3.1
4296	1909	2-6-0	3' 0"	United Fruit Co. Panama **25**	15.3.1
4297	1909	2-6-0	3' 0"	United Fruit Co. Panama **26**	15.3.1
4301	1909	0-6-0ST	3' 0"	ICC **821**	15.2.2
4302	1909	0-6-0ST	3' 0"	ICC **822**	15.2.2
4303	1909	0-6-0ST	3' 0"	ICC **823**	15.2.2
4304	1909	0-6-0ST	3' 0"	ICC **824**	15.2.2
4305	1909	0-6-0ST	3' 0"	ICC **825**	15.2.2
4306	1909	0-6-0ST	3' 0"	ICC **826**	15.2.2
4307	1909	0-6-0ST	3' 0"	ICC **827**	15.2.2
4308	1909	0-6-0ST	3' 0"	ICC **828**	15.2.2
4309	1909	0-6-0ST	3' 0"	ICC **829**	15.2.2
4310	1909	0-6-0ST	3' 0"	ICC **830**	15.2.2
4368	1909	2-6-0	3' 0"	United Fruit Co. Chanquirola RR **27**	15.3.1
4369	1909	2-6-0	3' 0"	United Fruit Co. Chanquirola RR **28**	15.3.1
4656	1910	0-6-0ST	3' 0"	ICC **831**	15.2.2
4657	1910	0-6-0ST	3' 0"	ICC **832**	15.2.2
4666	1910	0-6-0ST	3' 0"	ICC **833**	15.2.2
4667	1910	0-6-0ST	3' 0"	ICC **834**	15.2.2
4837	1911	4-4-0	3' 0"	United Fruit Co. **'CHANGUINOLA 2'**	15.3.1
4838	1911	2-6-0	3' 0"	United Fruit Co. **3**	15.3.1
4839	1911	2-6-0	3' 0"	United Fruit Co. **4**	15.3.1
5239	1912	2-6-0	3' 0"	United Fruit Co. **?**	15.3.1
5240	1912	2-6-0	3' 0"	United Fruit Co. **?**	15.3.1
5241	1912	2-6-0	3' 0"	United Fruit Co. **?**	15.3.1
5513	1914	2-6-0	3' 0"	United Fruit Co. **36**, later to Chiriqui Land Co. **45**	15.3.1
5514	1914	2-6-0	3' 0"	United Fruit Co. **35**, later to Chiriqui Land Co. **46**	15.3.1
5515	1914	2-6-0	3' 0"	United Fruit Co. **38**, later to Chiriqui Land Co. **47**	15.3.1
5516	1914	2-6-0	3' 0"	United Fruit Co. **39**, later to Chiriqui Land Co. **48**	15.3.1
6580	1920	2-6-0	3' 0"	*Cía. Agricola de Panama*, possibly for United Fruit Co. **63**	15.3.1
6581	1920	2-6-0	3' 0"	*Cía. Agricola de Panama*, possibly for United Fruit Co. **64**	15.3.1
6582	1920	2-6-0	3' 0"	*Cía. Agricola de Panama*, possibly for United Fruit Co. **65**	15.3.1
6709	1922	0-4-0	3' 0"	United Fruit Co. **71**	15.3.1
6710	1922	0-4-0	3' 0"	United Fruit Co. **72**	15.3.1
6711	1922	0-4-0	3' 0"	United Fruit Co. **73**	15.3.1
7323	1941	2-6-0	5' 0"	ICC **801**	15.1.3
7324	1941	2-6-0	5' 0"	ICC **802**	15.1.3
7325	1941	2-6-0	5' 0"	ICC **803**	15.1.3
7326	1941	2-6-0	5' 0"	ICC **804**	15.1.3
7327	1941	2-6-0	5' 0"	ICC **805**	15.1.3
7328	1941	2-6-0	5' 0"	ICC **806**	15.1.3

Portland

37	1852	4-4-0	5' 6"/5' 0"	Panama RR **1 'NUEVA GRANADA'**	15.1.1
38	1852	4-4-0	5' 6"/5' 0"	Panama RR **2 'BOGOTÁ'**	15.1.1

39	1852	4-4-0	5' 6"/5' 0"	Panama RR **3 'PANAMÁ'**	15.1.1
65	1854	4-4-0	5' 6"/5' 0"	Panama RR **4 'GORGONA'**	15.1.1
69	1854	4-4-0	5' 6"/5' 0"	Panama RR **5 'OBISPO'**	15.1.1
70	1854	4-4-0	5' 6"/5' 0"	Panama RR **6 'MATACHIN'**	15.1.1
78	1855	4-4-0	5' 6"/5' 0"	Panama RR **7 'GATUN'**	15.1.1
79	1855	4-4-0	5' 6"/5' 0"	Panama RR **8 'MANZANILLA'**	15.1.1
89	1856	4-4-0	5' 6"/5' 0"	Panama RR **9 'CARDENAS'**	15.1.1
90	1856	4-4-0	5' 6"/5' 0"	Panama RR **10 'BARBACOAS'**	15.1.1
125	1865	4-4-0	5' 0"	Panama RR **12 'ATLANTIC'**	15.1.1
126	1865	4-4-0	5' 0"	Panama RR **13 'PACIFIC'**	15.1.1
136	1865	0-4-0T	5' 0"	Panama RR **14 'COLON'**	15.1.1
148	1867	0-4-0T	5' 0"	Panama RR **15 'CHIRIQUI'**	15.1.1
149	1867	0-4-0T	5' 0"	Panama RR **16 'DARIEN'**	15.1.1
150	1867	4-4-0	5' 0"	Panama RR **17 'SOUTH AMERICA'**	15.1.1
151	1868	4-4-0	5' 0"	Panama RR **18 'NORTH AMERICA'**	15.1.1
157	1869	4-4-0	5' 0"	Panama RR **19 'NEW YORK'**	15.1.1
158	1869	4-4-0	5' 0"	Panama RR **20 'SAN FRANCISCO'**	15.1.1
261	1873	0-4-0	5' 0"	Panama RR **21 'VERAGUAS'**	15.1.1

Rogers

814	1858	4-4-0	5' 0"	Panama RR **11 'ISTHMUS'**	15.1.1
3164	1882	0-6-0ST	5' 0"	Panama RR **1 'FERDINALD de LESSEPS'** then **1 'MEUSE'**	15.1.2
3165	1882	0-6-0ST	5' 0"	Panama RR **2 'V. DAUZATS'** then **2 'GIRONDE'**	15.1.2
3167	1883	0-6-0ST	5' 0"	Panama RR **3 'A. RICHIER'** then **3 'MOSELLE'**	15.1.2
3170	1883	0-6-0ST	5' 0"	Panama RR **4 'G. SALETA'** then **4 'GARONNE'**	15.1.2
3166	1883	4-4-0	5' 0"	Panama RR **12 'SEINE'**	15.1.2
3168	1883	4-4-0	5' 0"	Panama RR **13 'LOIRE'**	15.1.2
3169	1883	4-4-0	5' 0"	Panama RR **14 'RHONE'**	15.1.2
3336	1883	4-4-0	5' 0"	Panama RR **15 'ISERE'**	15.1.2
3337	1883	4-4-0	5' 0"	Panama RR **16 'CHARENTE'**	15.1.2
3348	1883	4-4-0	5' 0"	Panama RR **17 'TARN'**	15.1.2
3349	1883	4-4-0	5' 0"	Panama RR **18 'DURANCE'**	15.1.2
3359	1883	0-6-0T	5' 0"	Panama RR **19 'VAR'**	15.1.2
3360	1883	0-6-0T	5' 0"	Panama RR **20 'DORDOGNE'**	15.1.2
3370	1883	0-6-0T	5' 0"	Panama RR **21 'ALLIER'**	15.1.2
3371	1883	0-6-0T	5' 0"	Panama RR **22 'CHER'**	15.1.2
3378	1883	0-6-0T	5' 0"	Panama RR **23 'LOIRET'**	15.1.2
3379	1883	0-6-0T	5' 0"	Panama RR **24 'AUBE'**	15.1.2
3380	1883	0-6-0T	5' 0"	Panama RR **25 'AISNE'**	15.1.2
3381	1883	0-6-0T	5' 0"	Panama RR **26 'AIN'**	15.1.2
3387	1883	0-6-0T	5' 0"	Panama RR **27 'YONNE'**	15.1.2
3388	1883	0-6-0T	5' 0"	Panama RR **28 'ORNE'**	15.1.2
3389	1883	0-6-0T	5' 0"	Panama RR **29 'AUDE'**	15.1.2
3390	1883	0-6-0T	5' 0"	Panama RR **30 'GARD'**	15.1.2
3399?	1883	0-6-0T	5' 0"	Panama RR **31 'CREUSE'**	15.1.2
3397	1883	0-6-0T	5' 0"	Panama RR **32 'INDRE'**	15.1.2
3398	1883	0-6-0T	5' 0"	Panama RR **33 'DOUBS'**	15.1.2
3399	1883	0-6-0T	5' 0"	Panama RR **34 'MAYENNE'**	15.1.2

3402	1883	0-6-0T	5' 0"	Panama RR **35 'OISE'**	15.1.2
3403	1883	0-6-0T	5' 0"	Panama RR **36 'LOT'**	15.1.2
3406	1883	0-6-0T	5' 0"	Panama RR **37 'ARIEGE'**	15.1.2
3407	1883	0-6-0T	5' 0"	Panama RR **38 'AVEYRON'**	15.1.2
3408	1883	0-6-0T	5' 0"	Panama RR **39 'ARDECHE'**	15.1.2
3409	1883	0-6-0T	5' 0"	Panama RR **40 'VIENNE'**	15.1.2

St. Leonard

693	1885	0-6-0T	5' 0"	*CUCI* **78**	15.1.2
694	1885	0-6-0T	5' 0"	*CUCI* **79**	15.1.2
695	1885	0-6-0T	5' 0"	*CUCI* **80**	15.1.2
696	1885	0-6-0T	5' 0"	*CUCI* **81**	15.1.2
697	1885	0-6-0T	5' 0"	*CUCI* **82**	15.1.2
698	1885	0-6-0T	5' 0"	*CUCI* **83**	15.1.2
699	1885	0-6-0T	5' 0"	*CUCI* **84**	15.1.2
700	1885	0-6-0T	5' 0"	*CUCI* **85**	15.1.2
701	1885	0-6-0T	5' 0"	*CUCI* **86**	15.1.2
702	1885	0-6-0T	5' 0"	*CUCI* **87**	15.1.2
703	1885	0-6-0T	5' 0"	*CUCI* **88**	15.1.2
704	1885	0-6-0T	5' 0"	*CUCI* **89**	15.1.2
705	1885	0-6-0T	5' 0"	*CUCI* **90**	15.1.2
762	1887	0-6-0T	5' 0"	*CUCI* **167**	15.1.2
763	1887	0-6-0T	5' 0"	*CUCI* **168**	15.1.2
764	1887	0-6-0T	5' 0"	*CUCI* **169**	15.1.2
765	1887	0-6-0T	5' 0"	*CUCI* **170**	15.1.2
766	1887	0-6-0T	5' 0"	*CUCI* **171**	15.1.2
767	1887	0-6-0T	5' 0"	*CUCI* **172**	15.1.2
768	1887	0-6-0T	5' 0"	*CUCI* **173**	15.1.2
769	1887	0-6-0T	5' 0"	*CUCI* **174**	15.1.2
770	1887	0-6-0T	5' 0"	*CUCI* **175**	15.1.2
771	1887	0-6-0T	5' 0"	*CUCI* **176**	15.1.2

G. E. Sellers

?	1851	4-4-0	Std.?	Panama RR **'?'**	15.1.1
?	1852	4-4-0	Std.?	Panama RR **'ISTHMUS'**	15.1.1
?	1852	4-4-0	Std.?	Panama RR **'?'**	15.1.1

Vulcan Iron Works

1244	1908	0-4-0ST	3' 0"	ICC **851**	15.2.2
1245	1908	0-4-0ST	3' 0"	ICC **852**	15.2.2
1246	1908	0-4-0ST	3' 0"	ICC **853**	15.2.2
1247	1908	0-4-0ST	3' 0"	ICC **854**	15.2.2
1248	1908	0-4-0ST	3' 0"	ICC **855**	15.2.2
