



# C&TS DISPATCH

VOLUME 38  
SPRING

NO. 1  
2025



## The Annual Bit of History Issue

*100 Years of K-36 Locomotives  
on the D&RGW and the C&TS!*

*Skills of a K-36 Fireman and Engineer  
A Portfolio of K-36s, 480 to 489  
Restoring 483 for Display in Chama  
Meet our New Executive Director, Rick Marsden  
Plus: Work Session Schedules A - D*







## C&TS DISPATCH

Friends of the Cumbres & Toltec  
Scenic Railroad, Inc.

William Lock, Founder-1988

Vol. 38, No.1 🌸 Spring, 2025

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**Vice Chairman:** Caroline Tower

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### C&TS DISPATCH

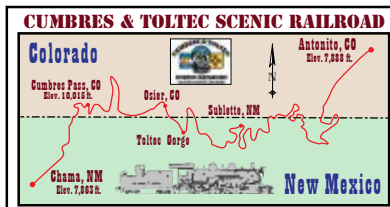
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The C&TS Dispatch is published four times each year by The Friends of the Cumbres & Toltec Scenic Railroad Inc., a New Mexico nonprofit corporation. The Friends is the official museum arm for the Cumbres & Toltec Scenic Railroad, a sixty-four mile-long Railroad and museum of railroad history and technology, operating between Antonito, Colorado, and Chama, New Mexico. The Railroad is owned jointly by the States of Colorado and New Mexico. As the museum arm, the Friends is dedicated to the preservation and interpretation of the Railroad. The Friends is an Affiliate Member of the Heritage Rail Alliance (HRA). All contributions are fully tax deductible and will be gratefully accepted. For information, please write us in Albuquerque at the **Friends of the Cumbres & Toltec Scenic Railroad, Inc., 4421 McLeod Rd. NE, Suite F, Albuquerque, NM, 87109**, or call us at (505) 880-1311.



Denver & Rio Grande Railway: 1880-1886  
Denver & Rio Grande Railroad: 1886-1921  
Denver & Rio Grande Western Railroad: 1921-1970  
Cumbres & Toltec Scenic Railroad: 1970-today

**The Cumbres & Toltec Scenic Railroad is both a  
National Historic Landmark and a  
State Registered Historic Site.**

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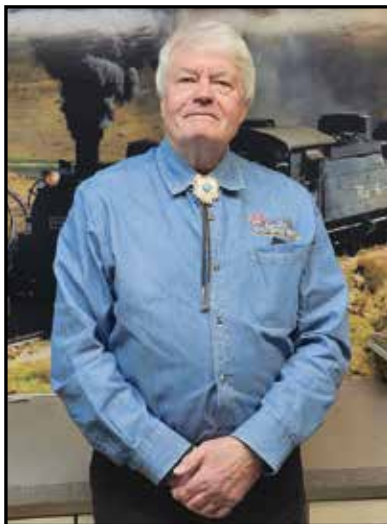
## Friends of the C&TS: TELEGRAPH

# Meet Rick Marsden, the Friends' new Executive Director

By Paul Davenport

**I**t's no accident that the new Executive Director of the Friends of the Cumbres & Toltec Scenic Railroad has a strong background in marketing and sales in addition to experience in other areas of business such as finance and operations.

That's because **Rick Marsden** and the Friends board are both well aware that the 36-year-old Friends organization's membership and volunteer workforce are decreasing at a time when the Railroad's rosters of cars and structures needing restoration and preservation work is growing, not shrinking.



"That's the big one," Marsden said during an interview with the *C&TS Dispatch*, referring to the challenge of promoting the Friends organization to boost both the overall Friends membership and its volunteer ranks.

Thanks to the pandemic, demographics and other factors, recent years have seen fewer members join and sign up for volunteer work. Meanwhile, harsh weather in Narrow Gauge Country beats down on the wood and paint of cars and structures.

Following a months-long search aided by an executive recruiter, the Friends board of directors in late January announced the selection of Marsden as Executive Director of the

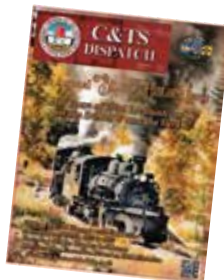
Albuquerque-based nonprofit that serves as the historic preservation, restoration and interpretation arm of the Cumbres & Toltec Scenic Railroad.

Marsden formally began work in mid-February, replacing Tim Tennant, who gave notice early last year that he planned to step down after twenty years of leading the Friends organization under the overall guidance of the Friends Board of Directors.

Tennant moved to New Mexico from Wisconsin where he held senior positions at the National Railroad Museum in Green Bay, but his replacement already has ties to the Southwest. Following a business career on the East Coast, Marsden and his wife, Marsha, retired and moved to New Mexico in 2013, making their new home in Placitas, located north of Albuquerque.

A lifelong railfan, Marsden joined the Friends in 2014 and has been an active volunteer, helping out with the Friends historic photo archives at the Friends office in Albuquerque and also working on Friends special excursion trains.

In 2016, Marsden joined the New Mexico Steam Locomotive and Railroad Historical Society and its AT&SF No. 2926 locomotive restoration project in Albuquerque. He is a past vice president of the organization.



**On the cover:** A double-header led by K-36 484 charges east out of Chama, approaching Lobato Trestle. The two locomotives will cross separately and re-couple on the other side of the trestle. If there was a 19<sup>th</sup> century painter waiting at the curve, this might be what he would have committed to canvas.

Original photo 2007 and digital artwork 2025, both by Chris James with a pinch of AI.

With the locomotive group, Marsden contributed in many ways, including merchandise sales, mechanical work, events, promotional activities and fundraising.

"To put it quite frankly, I was ready for a new opportunity and with Tim's (impending retirement), they were looking for someone to step in and try to fill Tim's shoes," Marsden said. "I know it's going to be a lot of work but I'm excited to take it on."

In the eyes of the Friends board's selection committee, Marsden's background in business and his volunteering with the Friends and the locomotive restoration project positioned him well to promote the Friends, develop strategies to attract new members and boost the volunteer ranks, said Don Stewart, the Friends board chairman,

"He wants to be out there and to talk with people," Stewart said of Marsden.

Marsden said he looks forward to meeting additional Friends members when he and his wife run the Friends meal operation in the Chama yard during the C and D volunteer work sessions in late June.

The fact that the Friends held only two work sessions in Chama in the last two years, down from four in 2019, illustrates the impact of not having enough volunteers to do all the work needed to preserve and rehabilitate many of the historic freight cars and structures suffering from too much harsh weather and not enough maintenance.

Marsden said he has spoken with Friends leaders such as Bill Lock and Caroline Tower about the organization's mission and challenges.

During the interview conducted immediately after Marsden's selection in late January, he said his "snapshot impressions are still forming." However, he said, it's clear "the organization as a whole is aging out and that's a hard thing to say to people."

That trend has the effect of decreasing the number of volunteer workdays and the amount of work that can be performed, Marsden said. "So we need volunteers and docents and these volunteers and docents have to be a younger generation so we have them with us for five or more years if that's possible and to keep grooming them to work in the future."

Marsden said the Friends recruiting efforts should target three different age groups: single people ages 21 to 35, singles or couples ages 35-55 and folks older than 55. "You must approach them differently," with recruitment campaigns varying by medium and approach, he said.

"We need to tell our story, as often as we can, spread the word around," he said. "This is where video and YouTube will help" as the Friends continue expanding their efforts in the use the internet and electronic media.

Those efforts and a new focus on merchandise sales will help provide "other positive exposure for the mission of the Friends, he said.

"You want to create an emotion, an excitement in what

you're doing," he said.

Volunteering during work sessions lets a person work on the railroad without working for the railroad, he said. "It's really a unique opportunity if you frame it right."

Friends members do volunteer work in the yards in Chama, New Mexico, and Antonito, Colorado, and at other work sites in Albuquerque, New Mexico and Colorado Springs, Colorado. Members also toil along the right-of-way, serve as docents aboard the Railroad's passenger trains and work remotely from home.

As for Friends merchandise, offering "snappier" ballcaps and the like can help attract eyeballs and draw attention that gets people thinking about the Friends, he said.

Marsden was very eager to be considered for Executive Director, Stewart said. "He was almost bubbling over with excitement about the ability to be in that position."

Marsden said he felt the position of Friends Executive Director was a great fit, given his business background, volunteer experience and being

both a railfan and a history buff. The latter was an interest shared by both of his parents.

"There's so much history and parts of New Mexico and Colorado owe their history to the (Denver & Rio Grande Railroad) and (the Cumbres & Toltec) is running on the original track built by the Rio Grande," Marsden said.

"The Friends are keeping history alive," he said. "It's right up my alley."

Marsden said his interest in trains began as a child due to his grandfather having been general manager and part owner of the Emmitsburg Railroad Co., a standard-gauge short feeder line to the Western Maryland Railroad.

Marsden said his much-younger self loved poking around the long-defunct railroad's facilities and avidly studying historic photos, maps and railroad documents. His interest extended to toy trains with a layout in his parents' basement. His belongings now include artifacts such as survey maps and even a station agent desk.

In his youth, "steam trains always were my favorite type of railway equipment to visit, study and photograph," Marsden said. "Yes, I got bitten as a young boy."

While he's not a purist and likes both standard gauge and narrow gauge, "I specifically have this soft spot in my heart for steam equipment."

Marsden grew up in the Washington, D.C., area, graduating from the University of Maryland with a business administration degree with a focus on finance and marketing.

His work career included both owning businesses and working in others in a variety of industries, including tile manufacturing and home fittings. It all provided experience in multiple aspects of business, including sales, manufacturing, company promotion, personnel management, finance and marketing.



## Wanted: Chair of the Friends Safety Committee



The Friends are looking for a **Safety Officer** to administer the Friends Safety Program. As Safety Officer and Chair of the Safety Committee, he or she will work with the C&TS Railroad Safety Officer to ensure a safe environment for Friends volunteers and direct safety programs at work sessions. He or she must have experience in the safety field or involved in safety in the private sector such, as an *Operation Lifesaver* volunteer providing safety training for the general public. The person must also have good communication skills in order to explain safety issues to volunteers, especially when working around railroad operations.

The **Friends Safety Committee** serves as a focal point for the development of plans, policies and procedures designed to enhance the effectiveness of safety as it relates to the Friends mission. The Committee's goal is to promote the Friends safety program by techniques, developments, effective safety practices and standards. There are five members on the committee with a Safety Officer and alternate. The Friends Safety Committee convenes once a year at the fall meeting and deals with issues relating to safety throughout the year. We try to broadcast the meeting over the web (via *Teams* or *Zoom*) for those who cannot attend in person.

For more information, contact: **John Engs**, [jengs@cumbrestoltec.org](mailto:jengs@cumbrestoltec.org)

## Work Session Schedule, 2025 (as of 3/18/2025)

Listed below is the schedule for Sessions A-D. E-G will be posted in a later issue. **Please note that the project schedule is often quite fluid and may change throughout the season without notice.** The most current schedule is posted on the Friends website at [www.friendsofcumbrestoltec.org](http://www.friendsofcumbrestoltec.org) or the QR code to the right.



Support Services Projects					
Proj Num	Project Description	Session A 5/26 - 5/30	Session B 6/2 - 6/6	Session C 6/16 - 6/20	Session D 6/23 - 6/27
<a href="#">0200</a>	Chama restoration session Site Leader.			D. Stewart + none	D. Stewart + none
<a href="#">0201</a>	Antonito CRF restoration session Site Leader.	J. Hickman + none	J. Hickman + none	D. Atkinson + none	D. Atkinson + none
<a href="#">0210</a>	Work Session Check-In for Chama			J. Davenport + none	J. Davenport + none
<a href="#">0211</a>	Work Session Check-in Antonito CRF	M. J. Smith + none	M. J. Smith + none		
<a href="#">0222</a>	Friends merchandise sales - registration location.	M. J. Smith + none	M. J. Smith + none	J. Davenport + none	J. Davenport + none
<a href="#">0230</a>	Food Preparation - Chama lunches and snacks.			R. Marsden (Asst: M. Marsden) + 1	R. Marsden (Asst: M. Marsden) + 1
<a href="#">0231</a>	Food Preparation - Antonito CRF Lunches.	M. Barlen (Asst: J. E. Mitchell) + 1	M. Barlen + 2	L. Aldrich + 1	L. Aldrich + 1
<a href="#">0240</a>	Tool Car Operation - Chama			C. McMullen (Asst: J. Davenport) + none	C. McMullen (Asst: J. Davenport) + none
<a href="#">0241</a>	Bolt Car Operation - Chama			TL NEEDED + none	TL NEEDED + 1
<a href="#">0245</a>	Tool & Bolt Operation - Antonito CRF.	M. Smith + 1	M. Smith + none	G. Davies + none	G. Davies + none
<a href="#">0246</a>	Paint Car Operation - Chama			F. Higgins + 1	F. Higgins + 1
<a href="#">0248</a>	Lettering Coordinator - Stencil Car			S. Jorgensen + none	S. Jorgensen + none
<a href="#">0250</a>	Carpentry Shop Operation - Chama			C. McMullen + 2	C. McMullen + 2
<a href="#">0280</a>	Work Session Preparation at Chama		T. Stewart + 2		
<a href="#">0282</a>	Work Session Close at Chama				T. Stewart + 2
<a href="#">0294</a>	Hauling & Vehicle Operation	B. Reib + 1	B. Reib + 1	B. Reib + 1	B. Reib + 1
<a href="#">0310</a>	Safety Coordinator for Chama yard			J. Engs (Asst: D. Stewart) + none	J. Engs (Asst: D. Stewart) + none
<a href="#">0762</a>	Project Chronocling - Chama			M.Mee + 2	M.Mee + 2
<a href="#">0783</a>	Project Chronocling - Antonito CRF	TL NEEDED + 1	TL NEEDED + 1	M.Mee + 1	M.Mee + 1



**Support Services Projects**

Proj Num	Project Description	Session A 5/26 - 5/30	Session B 6/2 - 6/6	Session C 6/16 - 6/20	Session D 6/23 - 6/27
<a href="#">0200</a>	Chama restoration session Site Leader.			D. Stewart + none	D. Stewart + none
<a href="#">0201</a>	Antonito CRF restoration session Site Leader.	J. Hickman + none	J. Hickman + none	D. Atkinson + none	D. Atkinson + none
<a href="#">0210</a>	Work Session Check-In for Chama			J. Davenport + none	J. Davenport + none
<a href="#">0211</a>	Work Session Check-in Antonito CRF	M. J. Smith + none	M. J. Smith + none		
<a href="#">0222</a>	Friends merchandise sales - registration location.	M. J. Smith + none	M. J. Smith + none	J. Davenport + none	J. Davenport + none
<a href="#">0230</a>	Food Preparation - Chama lunches and snacks.			R. Marsden (Asst: M. Marsden) + 1	R. Marsden (Asst: M. Marsden) + 1
<a href="#">0231</a>	Food Preparation - Antonito CRF Lunches.	M. Barlen (Asst: J. E. Mitchell) + 1	M. Barlen + 2	L. Aldrich + 1	L. Aldrich + 1
<a href="#">0240</a>	Tool Car Operation - Chama			C. McMullen (Asst: J. Davenport) + none	C. McMullen (Asst: J. Davenport) + none
<a href="#">0241</a>	Bolt Car Operation - Chama			TL NEEDED + none	TL NEEDED + 1
<a href="#">0245</a>	Tool & Bolt Operation - Antonito CRF.	M. Smith + 1	M. Smith + none	G. Davies + none	G. Davies + none
<a href="#">0246</a>	Paint Car Operation - Chama			F. Higgins + 1	F. Higgins + 1
<a href="#">0248</a>	Lettering Coordinator - Stencil Car			S. Jorgensen + none	S. Jorgensen + none
<a href="#">0250</a>	Carpentry Shop Operation - Chama			C. McMullen + 2	C. McMullen + 2

**Projects in Sublette, NM**

<a href="#">1343</a>	SHPO - Repair Shingle Bunk House (SBH) exterior		B. Conry + none		
<a href="#">1344</a>	SHPO - Repair Log Bunk House (LBH)		B. Conry + none		
<a href="#">1345</a>	SHPO - Maintain and repair deteriorated Sublette Section House (SSH) structure and exterior. Please see NOTE for a health and safety recommendation.		B. Conry + 3		

**Projects in Osier, CO**

<a href="#">1408</a>	SHPO - Make general repairs to exterior of Osier Depot, windows, trim, soffits, batons and siding.			C.Wander (Asst: D. Schmidt) + 1	C.Wander (Asst: D. Schmidt) + 1
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**Projects in Cumbres, CO**

<a href="#">1005</a>	SHPO - Reconstruction of Car Inspector's House (Note: No lunches available in E or F sessions in 2025).			J. Pierce + 2	J. Pierce + 4
<a href="#">1365</a>	Construct Walking Trails - Cumbres Section Town and Historic signage, joint project with Scouts BSA.			J. Engs (Asst: T. Stewart) + none	J. Engs (Asst: T. Stewart) + none
<a href="#">1398</a>	Develop Master Plan for Cumbres Section Town MPC			R. Young (Asst: J. Engs) + none	R. Young (Asst: J. Engs) + none
<a href="#">1402</a>	Repair Cumbres Speeder Sheds #1 and #2				
<a href="#">1403</a>	SHPO - Replace Roof on Cumbres Section House - Contract	J. Engs + none	J. Engs + none		

**Projects Along the Right-of-Way**

<a href="#">0740</a>	Wood Preservative Treatment - Along the Line and Rail Yards				F. Higgins + 1
<a href="#">0750</a>	Maintain All Railroad Signage Along the 64-Mile Long Track			M. Mahoney (Asst: P. Davenport) + 4	

**Projects in Chama - Antonito**

Proj Num	Project Description	Session I 5/25 - 10/20
<a href="#">0400</a>	Docents Program on the C&TSRR	T. Stewart (Asst: J. Porco) + 40

Proj Num	Project Description	Session H 1/1 - 12/31
<a href="#">0208</a>	Volunteering on the Railroad Property Outside Scheduled or Special Work Sessions	<b>VOL NEEDED + 15</b>
<a href="#">0246</a>	Paint Car Operation - Chama	F. Higgins + none
<a href="#">0270</a>	Equipment Preparation - Chama/Antonito	L. Beier + none
<a href="#">0294</a>	Hauling & Vehicle Operation	B. Reib (Asst: L. Beier) + 5
<a href="#">0705</a>	Historic Signage at Osier. Install May - Remove October	T. Stewart + 1
<a href="#">0790</a>	Mowing of Grass (Rider Mower) Chama Yard and Stock Pens.	T. Stewart + 1
<a href="#">1005</a>	SHPO - Reconstruction of Car Inspector's House (Note: No lunches available in E or F sessions in 2025).	J. Pierce + 10
<a href="#">1286</a>	Construction of Friends Storage Building. (Note: Lunches not available in session A in 2025.)	B. Conry + 10
<a href="#">1345</a>	SHPO - Maintain and repair deteriorated Sublette Section House (SSH) structure and exterior. Please see NOTE for a health and safety recommendation.	B. Conry + 10
<a href="#">1398</a>	Develop Master Plan for Cumbres Section Town MPC	R. Young (Asst: J. Engs) + none

#### Projects in Chama - Antonito

Proj Num	Project Description	Session I 5/25 - 10/20
<a href="#">0400</a>	Docents Program on the C&TSRR	T. Stewart (Asst: J. Porco) + 40
Proj Num	Project Description	Session J 1/1 - 12/31
<a href="#">1394</a>	Social Media Volunteer Assistance	K. Walser + 5
<a href="#">1395</a>	Education Programs	M. Sellers (Asst: K. Walser) + 25

#### Projects in Colorado Springs

Proj Num	Project Description	Session COS 1/1 - 12/31
<a href="#">0201</a>	Antonito CRF restoration session Site Leader.	J. Engs + none
<a href="#">0211</a>	Work Session Check-in Antonito CRF	J. Engs + none
<a href="#">0311</a>	Safety Coordinator for Antonito CRF	J. Engs + none
<a href="#">1101</a>	Manufacture Molds for Door Parts and Cast for Box Cars.	R. Schaefer + none
<a href="#">1125</a>	Maintain COS Site Facilities and Area	D. Atkinson (Asst: J. Engs) + 12
<a href="#">1373</a>	Restoration of D&RG / D&RGW Express Baggage Car # 163	J. Engs + 15

## Join the Friends at **OUTLAW BBQ**

1018 NM-17, Chama  
for a delicious BBQ  
Buffet Dinner, followed by  
a summer evening trip up  
to Cumbres and back on  
the C&TS!



This is a "Thank You"  
from the Friends and  
the C&TS for all the  
fine work the volun-  
teers do every year!

## **OUTLAW BBQ DINNER & FRIENDS VOLUNTEER TRIP, JUNE 20, 2025**

Meet at the BBQ for seating at 4pm sharp!

**Be back at the depot by 5:15 for a 5:30 departure!**

**Total cost for the meal AND the train ride is only \$70!**

**Return to Chama about 8:30pm**

For reservations, and  
tickets, contact  
the Friends office at  
505-880-1311





# 100 Years of K-36 Locomotives on the D & RGW and the Cumbres & Toltec Scenic Railroad

## Featuring:

**Earl Knoob**

**Mike McKenzie**

**Ben Sargent and Robert Schoen**

**Chris James**

**and**

**The Friends of the C&TS Volunteers!**



*D&RGW #484 is almost at Cumbres Pass as it rounds Windy Point with an eastbound freight. Photo John B. West July 23, 1963.  
FCTS Dorman Collection, JW01-136*

**2025 marks the 100th anniversary** of the Cumbres & Toltec Scenic Railroad's iconic K-36 locomotives. For their time, they were the most powerful locomotives on what remained of the once-expansive Denver & Rio Grande narrow gauge system. Originally, General Palmer chose a three-foot narrow gauge for his railroad into the Rockies: it had the advantage being less expensive for both construction and rolling stock, and the ability to make tighter radius curves in the rugged terrain. But as his Railroad grew, Palmer discovered that to compete with the connecting standard gauge lines, the D&RG (now the D&RGW) needed to be a standard gauge railroad.

By the end of World War I, most of the D&RGW system had already been upgraded to standard gauge but narrow gauge shipping was still king in the regions that couldn't support a standard gauge right-of-way. The remnants of the D&RG's original narrow gauge system, about one third of the original D&RG, were in two of the most rugged portions of Colorado: over Marshall Pass to the coal country around Crested Butte, and the Southwest Extension over Cumbres Pass to the silver mines and oil fields in the San Juans. Both routes featured steep grades and tight curves, perfect for narrow gauge operation.\*

This increase in narrow gauge traffic required more power. In 1903 the D&RG had ordered K-27 2-8-2 locomotives from Baldwin and heavier K-28 locomotives from Alco in 1922. While well received by the railroaders, the D&RG went back to Baldwin Locomotives Works and ordered ten heavier, more powerful locomotives to allow for longer, heavier trains over the difficult, but important, narrow gauge routes. The new engines were classed as "K-36s" for their 2-8-2 wheel arrangements ("MiKado") and their 36,200-pound tractive effort. Built in Philadelphia, they were delivered to the Denver & Rio Grande

\*The Farmington Branch was initially built in 1905 as standard gauge, with the assumption that the rest of the Southwest Extension would soon be converted to standard gauge as well. When that idea was deemed impractical due to the terrain, the Farmington Branch was "downgraded" to three-foot narrow gauge in 1923 to match the rest of the otherwise shrinking narrow gauge system.

Western in Salida on standard gauge flatcars in April 1925 and quickly placed into service. Each of the ten new locomotives, numbered 480 through 489, cost approximately \$28,000 in 1925 dollars.\*

Originally, five of the new locomotives—480, 482, 484, 487 and 488 were based out of Salida and assigned to the Monarch branches, the steep and winding Marshall Pass route to Gunnison and up to the coal country north and west of Crested Butte, and the flat and straight Valley Line south to Alamosa. The other five—481, 483, 485, 486, and 489—were put into service out of Durango to pull trains over the 4% grades of Cumbres Pass to Silverton and to the oil country around Farmington. A lot of new infrastructure in the way of larger turntables, new coaling tipples and enlarged shop facilities was built to service and operate the new locomotives in Salida, Durango, Gunnison and Chama. The Chama Coal Tipple has also celebrated its 100<sup>th</sup> anniversary, thanks to the K-36 locomotives.

Over the years the K-36s and its brethren, the K-37s, K-27s and K-28s, along with a few surviving smaller Class T-12 and C-16 locomotives kept the narrow gauge alive carrying ore, oil, coal, lumber, livestock and passengers throughout an otherwise remote and generally inhospitable corner of the Southwest. While specifically delivered to Salida and Durango, the K-36s were soon used throughout the D&RGW narrow gauge empire.

In the 1950s, transportation needs began to change. The CF&I Steel plant in Pueblo was no longer using Crested Butte coal, the mines of Silverton were closing, trucks were taking over the livestock shipments and, in 1964, the oil refinery in Alamosa burned, putting an end to the already-declining oil shipments.

As the Salida-based routes were facing abandonment in 1955-56, (485 was scrapped in 1956, see page 21) the nine remaining K-36s were sent the Southwest Extension to join their brethren along with the smaller K-27 and K-28 locomotives. The K-27s and K-28s were better suited for the lighter grades on the Durango, Silverton and Farmington routes. However, the K-36 locomotives' tractive effort was most effective on the steep grades and heavy loads between Durango and Antonito, especially on the 4% grade climbing east out of Chama, over Cumbres Pass.

Still, the narrow gauge operations saw dwindling freight traffic. Except for the growing tourist interest in a Silverton railroad adventure, passenger service elsewhere was gone

by the early 1950s. The Salida line over Marshall Pass was abandoned in 1955 and the Valley Line to Alamosa was converted to standard gauge. With the demise of Farmington's oil traffic, the Farmington Branch vanished in 1968. Tourist passenger traffic was growing on the Silverton Branch but between Durango and Antonito, the railroad had become an anachronism and the D&RGW wanted out. The Chama to Antonito operation was saved by the creation of the Cumbres & Toltec but it and the busy Durango & Silverton line were now separated by 107 miles of empty roadbed.

In 1970, when Colorado and New Mexico bought the C&TS, they acquired six K-36's: 482, 483, 484, 487, 488 and 489 and three K37's, 492, 494 and 495. In October 1991, the C&TS traded K-36 482 for Durango and Silverton's K-36 497. C&TS K-37s 494 and 495 were basically beyond restoration and were moved to static displays in Antonito where they remain today with

limited static restoration..

Today, four of the K-36 locomotives, 484, 487, 488 and 489 rule the 64 miles of the Cumbres & Toltec. Restoration has begun on K-37 492. K-36 483, the only working locomotive at the founding of the C&TS in 1970, was simply worn out. After sitting for years and supplying spare parts to the other K36s, its cosmetic restoration is near completion as a static exhibit in Chama. See page 18.

This issue of the *C&TS Dispatch*, the "Annual Spring History Issue," looks at some of the history of the K-36 class throughout the D&RGW narrow gauge system and climb into a K-36 cab with veteran C&TS hogger, Earl Knoob, as he describes the techniques as a fireman and engineer on the C&TS back in the early 1990s, originally published in the *C&TS Dispatch*, Summer, 2000 and Spring, 2001, and reprinted here with his kind permission. The issue includes a fabulous drawing of the K-36, inside and out, by Friends member Mike McKenzie, a look at a couple of mishaps over the years, Ben Sargent and Robert Schoen's summary of the 483's static restoration and a portfolio of the K-36s that have graced the rails of the D&RGW and the C&TS over the last 100 amazing years.

Sit back and enjoy the ride! *Chris James ~ Editor*



*K-36 locomotive 484 steams out, for today's Antonito run. 488 waits to help 484's train up the pass if required .*

*Photo: Chris James, June 26, 2009*

Portions of this issue were sourced from Jerry B. Day's book, *Rio Grande's Narrow Gauge K-36 Locomotives*, published in 2019 and available from White River Productions, \$69 plus postage, with the permission of both Jerry B. Day and White River Productions, with our thanks. <https://shop.whiteriverproductions.com/>.

\*By comparison, a 2025 Madza CX-30 is approximately the same price in 2025 dollars. On the whole, I'd rather own the locomotive ~ Ed.



# A Narrow Gauge Fireman's and Engineer's Guide to Survival on a K-36

by Earl Knoob

## Goin' Firin'

(Originally published in the *C&TS Dispatch*, Summer, 2000 and Spring, 2001)

**H**ow do you envision the job of a fireman on a coal burning locomotive? One extreme is the "romantic" version, poised proudly in the left-hand window, waving at the fans and the pretty girls at the crossings. The other extreme is the "dirty, nasty job" version, down on the deck, heaving coal with all you've got, while the engine crawls to the top of the hill on its hands and knees. As you may guess, reality is a middle ground somewhere between these two extremes. In this article, I thought I'd pass along some theories and hard-won facts to dispel (and confirm) some of the legends.

Of course, these opinions and practices are mine and if you ask ten different people how to fire, they will tell you ten different ways. When I was first learning this art, I had five people tell me five different methods. After politely listening, I developed my own practices based on these methods.

### Basic Duties

There are three duties that a fireman must perform. The first two are of equal importance: maintain the proper water level in the boiler and watch the track on the left side, especially on left-hand curves, out of sight of the engineer in the right-hand seat. The third is to maintain proper steam pressure.

Maintaining the proper water level is imperative because if there is insufficient water in the boiler, the roof of the firebox can be exposed, and the boiler will explode. Too much water will be carried into the cylinders, causing several problems including broken pistons, bent piston rods and blown out cylinder heads. The visible water in the glass and thus the apparent water level on the boiler changes with the grades that the locomotive is traversing. If the locomotive shows one-half glass of water on level track, when facing up a four-percent grade, the water level will be nearly full. While heading down that same grade, the water level will sink to the bottom. In addition, the water level will rise up

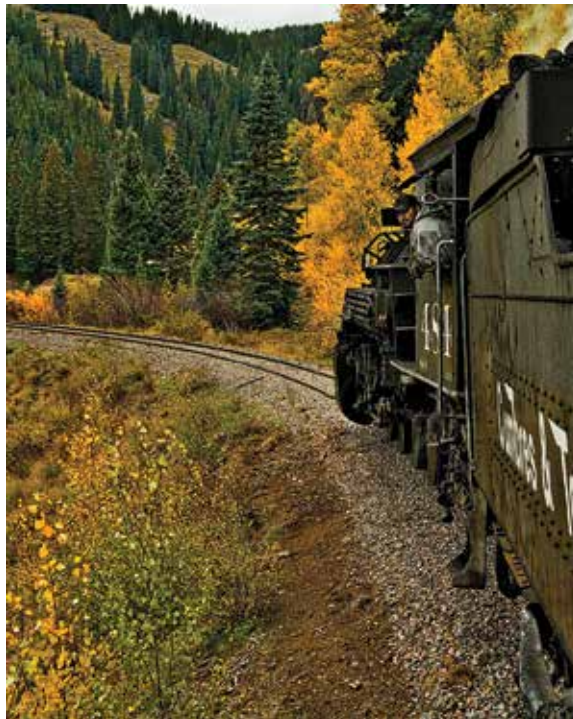
in the glass when the throttle is opened. Knowing how much water is needed at any particular point on the railroad is a matter of practice and experience.

Water is introduced into the boiler by the injector. Locomotives have two injectors, but under normal circumstances the fireman's injector on the left side is used to maintain the water level. The best plan is to match the injector's impact with the amount of water that's being boiled way into steam. This way you are maintaining the status quo. Water injected is regulated by a valve on the injector itself. By turning on the deck hose (which is fed from the injector's output) you can get a visual reference. When wide open, a solid stream comes from the hose. As the injector is cut back, steam starts to come with the water and becomes a fine spray. Learning how much to cut the injector back is, once again, a skill learned through experience.

The trick is to build a fire in a pattern that burns down across the grates. Then you place the coal in the firebox in the same pattern. Sounds real "zen," doesn't it. The fire draws its air through the grates from openings over the ash pan on the sides and rear. Therefore, the sides and rear of the fire get the most air and burn the coal faster than the front and center of the grates. Most firing efforts are directed down the sides and under the fire door. I divide the firebox into ten sections or "targets" in the following order: left front corner, center front, right front, left side, center, right side, left rear corner, left under the fire door, right under the fire door, and finally, right rear corner.

Or think of it as three across the front, three across the middle and four across the back. By placing the coal in a checkerboard fashion of alternating spots, you keep the fire burning evenly and keep the smoke to a manageable amount. Smoke is caused by fresh coal added to the fire,

reducing the temperature in that small location. Coal is made up of many compounds that burn at different temperatures. Some of these compounds burn at high heat until the fresh coal is heated to that point. These compounds simply go up the stack in a pretty cloud of black smoke. A black, dirty fire is a sign of too much coal



Fireman José Torres looks back to inspect the train as it descends Cumbres Pass below Windy Point.

Photo: Chris James, October 7, 2007

placed on the fire at one time, a fire that is too cool to support good combustion.

A pattern that worked for me for many years was to throw in five scoops at a time. Hit the sides front and center then under the door in the second pass. Occasionally you would have to double up the scoops into the back corners as they tend to burn up faster.

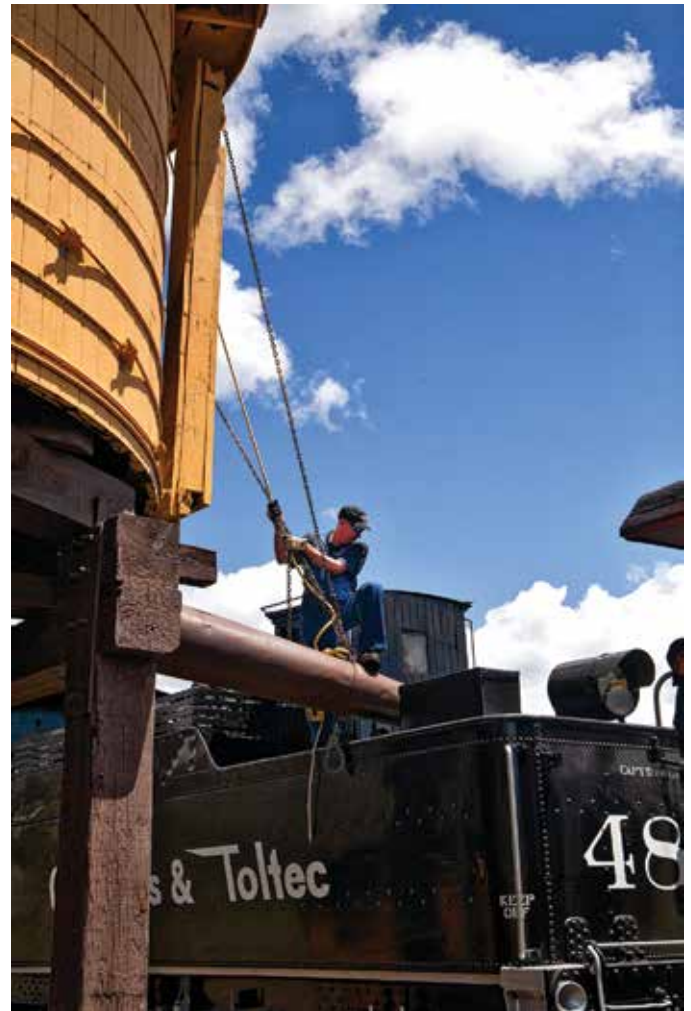
The art of shoveling coal is a feat worthy of mention. To keep your balance on the deck while swinging the shovel as the locomotive is dancing down the track requires a good three-point stance. Your right foot is placed on the apron between the cab and the tender. Your left foot is on the cab floor in close proximity to the fire box pedal. Brace your caboose against the back wall of the cab and there you have it. Your left hand on the shovel handle lifts the shovel and guides it, and your right hand and shoulder provides the power to shoot the coal into the firebox. Dig for a scoop of coal with your right shoulder and arm, turn and lift with your left as you hit the firebox pedal with your left foot and use your left arm to guide the scoop toward the door. As you propelled coal toward the door with your right arm loosen your grip on the shovel with your left hand and let the handle slide through your hand as you push the scoop in with your right arm. It's a sort of shooting pool with a shovel. (Do not try this at home!) You know the rest.

Hitting the spot with a scoop of coal is one of the secrets of success. Every time you miss you double your work. You don't want to lob the coal in or it will bounce off the arch brick and end up in a big pile in the center and nothing in front. Shoot the coal in as straight as possible when placing coal into the back corners, do a hook shot with your left arm and propel the load into the corners. When you put coal in the center of the fire, bounce the scoop lightly on the bottom of the firebox door and the coal scatters over a wider area.

Another point to make is "be as neat as possible." As you fire, pieces of coal invariably fall off the scoop onto the floor. Once you've done with your fire, clean up your mess. This will make the engineer think more highly of you but, more importantly if you don't clean up, a hunk of coal will find its way under the pedal. You will step on the pedal, swing the scoop and run full speed into a closed firebox, scattering in the coal everywhere (including the engineer's lap.) Whereupon the engineer will have a much lower opinion of you.

### **Chama to Cumbres**

Now that we have all this information, let's put it to work. In our hypothetical trip up Cumbres, we will have K-36 Locomotive 489 and a nearly full tonnage train of six coaches and open gon and Caboose 0306 on the rear. About 15 minutes before departure, we begin building our fire. As the steam pressure rises, turn on the injectors to get the water level up to a full glass before leaving town. It is not desirable to have a huge fire and full steam pressure upon departure. 489 will not be working very hard initially and all the fire will be wasted in black smoke and a roaring safety valve. You need enough fire on the grates to last you out of the yard. Your job leaving the yard is to watch the track and watch for signals from the train crew. You can't



*Fireman Tracy Caraway tops off the tender of K-36 484 before continuing on to Osier. Photo: Chris James, May 28, 2016.*

do that if you're on the deck firing.

As the train picks up speed across the Chama River Bridge and approaches the highway, keep the fire light with a minimum of smoke. Once across the highway, start building up your fire. You want to have the fire going strong when the engineer opens the throttle at the bottom of the hill beyond the Yard Limit sign. As 489 settles into its work, the steam gauge will rise. Turn on the injector and, with the deck hose as a guide, trim the injector back about halfway. With the injector set, get back down on the deck. The 489 is working hard now, and your fire isn't quite up to what it is asked of it. Getting up the first hill in good shape is very important. Trying to catch up on steam or water is very difficult when you have a heavy train. It's much easier to stay ahead.

Through the Chama River Narrows the grade step-stairs along. The best plan is to put in a fire (alternating the checkboard pattern) in the sags\* before the engine starts to work. Firing the moment the throttle is opened nearly always results in a loss of steam pressure. Once on the 4% grade at Milepost 341, things settle down. 489 is

\*A "sag" is a short slackening of the grade in the track. It might be in response to a sharp curve that would increase rolling friction, or some natural topographic situation. Railroads are seldom laid out on a perfect grade. The grade ebbs and flows with the landscape, requiring changes in throttle setting or air brake modulation.



buckling down to do her work at a 10-12 mph clip. The water should be right at the top of the glass. With the engine working steadily, you can get into a cycle watching the stack and the steam gauge. When the stack clears and the steam gauge appears to be as high as it will get, give her a fire. Five scoops will lower your steam pressure about two or three pounds. As the fire burns hotter and the stack begins to clear its black smoke, the steam pressure will begin to rise again.

Of course, once you get your act together, you arrive at Lobato where the grade levels off. By letting the fire die out a bit before the engineer eases off in the throttle, you can keep the safety valve from lifting. The relative flat grade at Lobato allow you a brief rest, but don't relax too long for immediately after crossing the trestle the engineer will lay the throttle open wide. Once on the trestle, start building your fire. There's a left-hand curve just beyond the trestle that you have to watch, so don't get caught napping.

Beyond Lobato, firing settles into a routine. Keep the steam pressure between 190 and 193 psi. Try to time your fire so you can watch the track on the left-hand curves. Keep a close eye on the water. With the heavy train you have today, somewhere around Dalton the water will begin to drop. Open the water valve a quarter turn to increase the injector flow to full capacity (no need to mess with the deck hose here.) You will probably keep the injector running like this running up the rest of the hill.

With things well in hand, let's try some "smokeless firing." This is done by firing only two or three scoops at a time in an X-pattern. You end up firing fairly constantly. I usually stand while I'm firing this method. Using the same firing targets I mentioned earlier, the first fire hits the left-front corner and two scoops into the right-rear corner. After about 15-seconds, hit the right-front corner and two into the left rear. Now bounce one into the center and put two under the fire door to the left. Your next fire will go down the left side and two scoops under the door to the right. Finally, your last fire goes down the right side and up-front center. As you can see, we just covered the firebox and it took five fires to do so. Each fire will send a very brief puff of smoke out the stack, but little else. The steam pressure will not vary more than a pound. It takes real practice and an ability to sense when the engine needs another fire (another one of those "zen" things) In the long run you end up using less coal this way as less is lost as smoke.

And so it goes, keep the water up, keep the steam up, watch the left-hand curves—simple as that.

There will come a trip sooner or later where you run into water trouble where, with the injector running wide open, the water continues to drop. On the right-side water glass of the K-36 is a tag at the one-third mark stating, "water must show here on a three percent grade." On a four percent grade, a half-glass minimum is required. If the water gets to three-fourths, I start to worry. At two-thirds of a glass it's time to stop and get our water back. Before you get that far, however, the engineer's injector can be run to help catch up. Remember, though, that the

*Continued on p.14*

### **Earl Knoob's**

## **"Well-Remembered Traits of K-36s on the C&TS"**

**It is said** that no two engines perform the same. There are many variables that affect how an engine fires and makes steam. Smokebox layout, grate arrangement, valve timing and how the engineer handles the throttle and reverse lever all have great effects on the fire. Below are some well-remembered traits of individual locomotives.

**484**—This locomotive always seemed to draft very hard in the rear of the firebox. It seems the rear always needed attention. If you got behind on steam, fill up the back. 484 steamed well enough, but you could get in to trouble on occasions.

**487**—Some firemen hated the 487. I never had much trouble with it. You could run your water higher in 487 than any other engine without getting into trouble. The trick was not to get in a hurry. It did draft a bit funny, If the stack was dark, you'd sit back and let it clear up before adding more fire. 487 would make steam all day with a dark gray haze to the stack—a bit darker than the others. It is definitely a locomotive you want to get ahead of and never get behind.

**488**—I have never been a fan of 488. It drafted harder than any other K-36 and pulled harder, too. It burned a lot of coal. If you kept it loaded up, it would steam well, but it seemed to be constantly asking for more coal. Because of the deeper firebox required, getting 488 to steam with a clear stack was really tough.

**489**—Queen of the fleet. 489 fired easy, steamed well and burned its fire very evenly. It can't be beat.

### **Then there are the "other" two:**

**463**—It was a bit like a little 480. It had a very shallow firebox and was very easy to get too much coal into her. You fired 463 with smaller shovelsfull at a more constant rate. 463 seemed to like more coal in the center than the 480s. 463 had quite a bit of heating surface but the actual volume of the boiler was small. Getting a head start on steam making is important. It has lifting injectors that are more than capable of keeping the water level where it should be. Because the steam dome is quite far ahead on the boiler, the water can be carried very high without worry.

**497**—The K-37s are a whole different story. Maybe we'll do a story on them for their 100<sup>th</sup> anniversary in 2028.

*(There are other locomotives on the C&TS that have run since Earl Knoob's tenure, but none of them are K-36s.)*

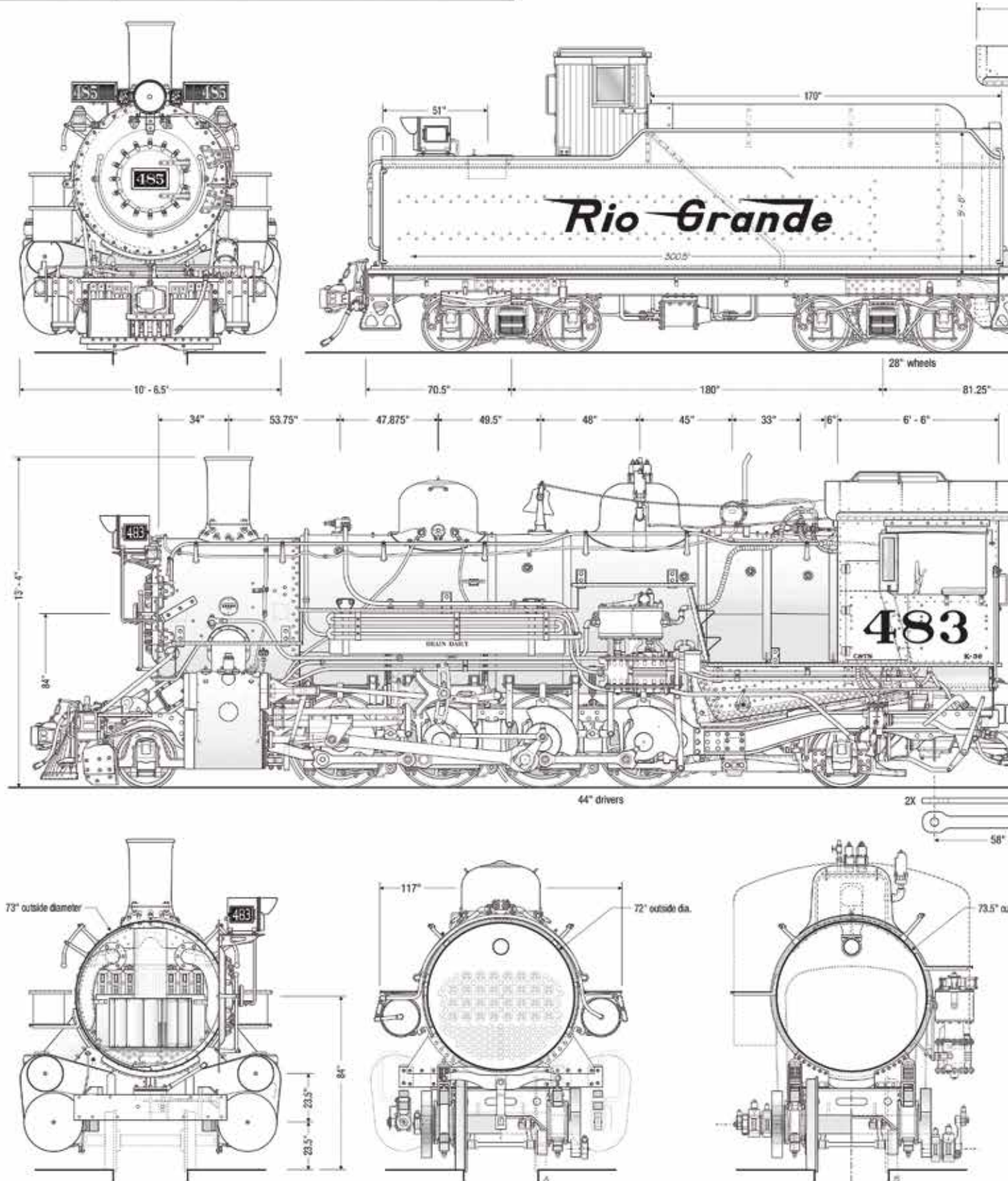
~ Ed

# D&RGW/C&TS K-36

scale:  $3/16" = 1'$  Used with permission of Mike McKenzie

DRAWN BY  
G M McKenzie

DATE  
03/20

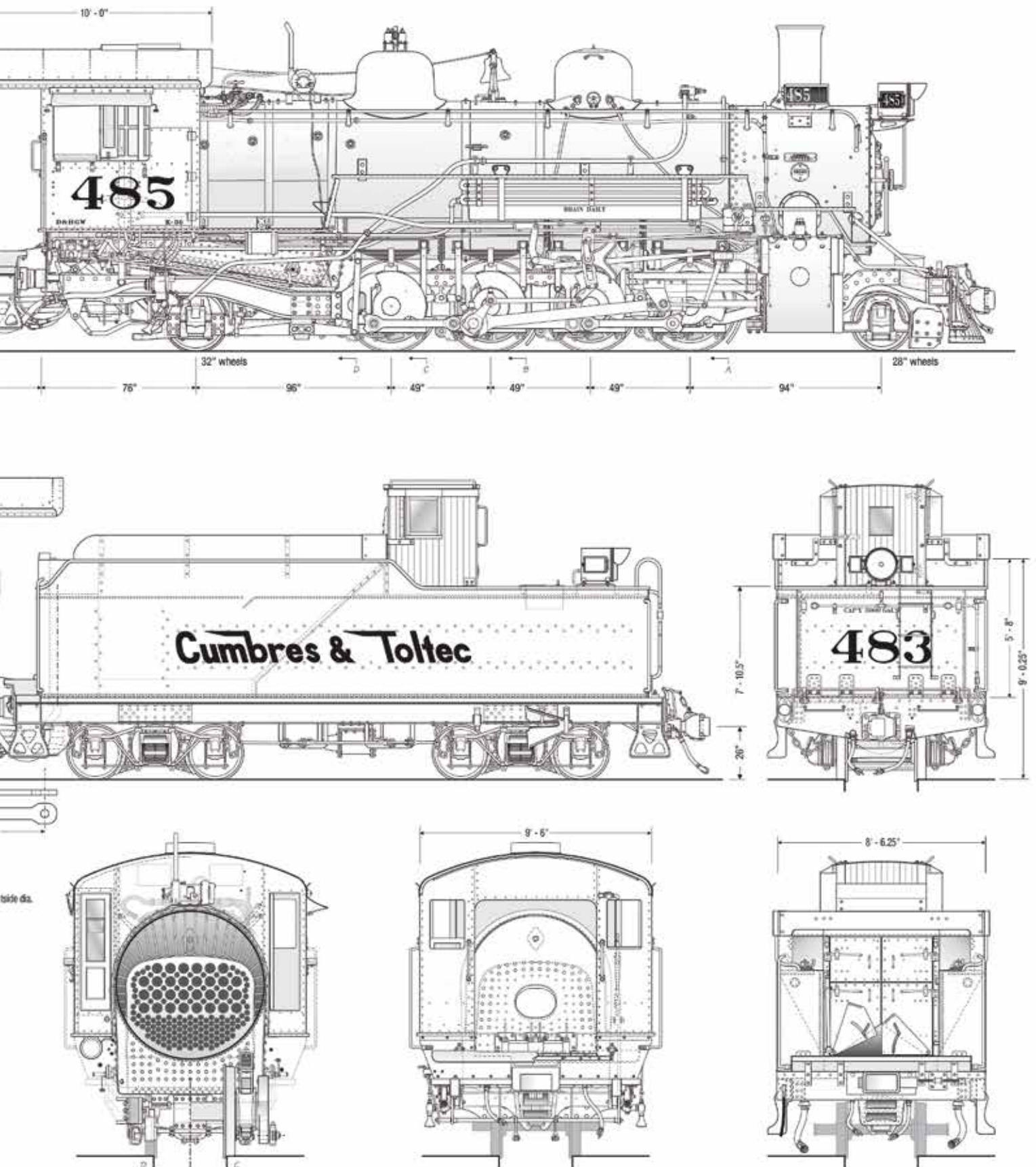


These K-36 drawings are adapted from drawings done by Friends member Mike McKenzie for Jerry B. Day's book "Rio Grande's Narrow Gauge K-36 Locomotives" (2020 White River Prod



& Jerry B. Day

NOTES: Drawing resources include D&RGW engineering department drawings available from [lvesteamlocomotive.com](http://lvesteamlocomotive.com), field notes from various sources, personal photo documentation and observation, photos and information from Jerry Day, photos from the Denver Public Library, photos from the Dorman and Payne collections - Friends of the Cumbres & Toltec Scenic Railroad, the K-36 Quick-Pic book from BHI Publications, and the shop photos of Carlos Llamas and Roger Hogan



ctions) and presented here in honor of the Cumbres & Toltec Scenic Railroad's 50th Anniversary Celebration

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Continued from p. 11

locomotive will not keep up steam with both injectors running. If you need to run the other injector, build up a big fire (one that will surely lift the safety valve) and have the engineer start his injector. Putting in more coal will accelerate the pressure loss. Tough it out for a couple of minutes while your steam slowly goes down. At about 180 pounds, turn off the engineer's injector. Now get your steam back. Two or three cycles like this will bring your water up a good inch and a half, but it's a lot of work. The best advice is to not get behind.

Experience has shown that two-thirds of the glass of water in the boiler when rounding Windy Point will get you over the top at Cumbres. As the engineer eases off on the throttle, the water in the glass will drop lower and lower and lower, until it's barely visible at the bottom of the glass when the train comes to a stop. If you've done your job right, the water will settle back up to about one-fourth of a glass after stopping.

Firing the east side of Cumbres uses the same principles. With considerably easier grades and less demands on the locomotive, firing is a little less stressful. Changes in water level, steam pressure and fire condition happen at a much slower rate. Heck, you can even enjoy the scenery occasionally.

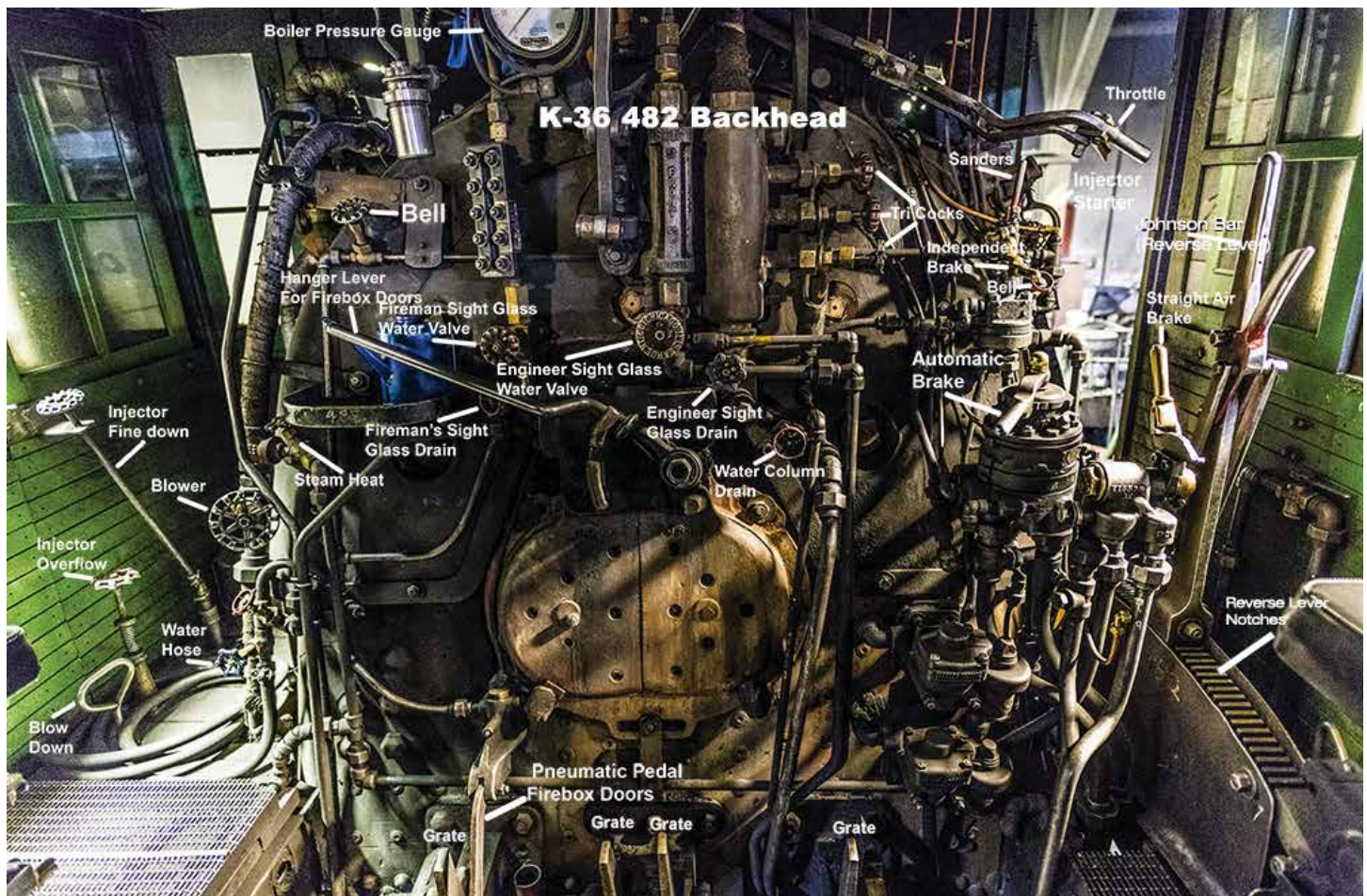
OK, are you all ready for Fireman's Exam number one? Grab a shovel!

## Engineer's Guide to Survival

Operating a locomotive on a narrow gauge (or anywhere for that matter) is very different job from that of firing. Whereas the fireman is responsible for creating the energy for the locomotive, the engineer is responsible for using that energy efficiently. In addition, the engineer must deliver a very precious cargo (human beings) to their destination in a safe and timely manner.

The engineer has four controls that are used on a regular basis: throttle, reverse lever, independent (locomotive) brakes and automatic (train) brakes. There are several other controls that are needed, including sanders, cylinder cocks, drifting throttle valve and driver brake cut-out but the four basic controls are the most important.

The throttle lever, a horizontal lever on the backhead of the boiler, extending from the center of the boiler to the engineer's side of the cab, controls the throttle valve located in the steam dome. The valve allows saturated steam from the boiler to flow down the dry pipe inside the boiler to the superheater in the smokebox. From the superheater header, the steam flows through a series of small pipes called superheater elements. These elements are placed inside large boiler tubes. The heat from the fire passes through these tubes on their way from the firebox to the smokebox and stack. There the hot gases heat the steam from 380 to 400 degrees to over 750



Source: *Rio Grande's Narrow Gauge K-36 Locomotives*, by Jerry B. Day, (2019) White River Productions.



degrees. Superheating removes moisture and creates a more perfect gas, thus increasing power and efficiency. From the superheater elements, the steam returns to the front of the boiler where it is routed into two large branch pipes by the valve chambers above the cylinders.

From the valve chambers, a spool-shaped piston valve directs steam into the cylinders. The piston valve controls the admission of steam into the cylinders, and the exhaust is sent up the smokestack. The piston valve gets its motion from the valve gear hung on the outside of the running gear. A large vertical lever coming up through the floor of the cab sets the valve gear. This lever is called the reverse lever.

The reverse lever, as the name implies, controls the direction of the locomotive. It also controls the “cut off” point on the valve gear (the point in the piston stroke where the admission of steam stops.) When starting the locomotive, the steam must be admitted into the cylinders for nearly the entire stroke. As speed is attained, however, the steam can be cut off earlier and allowed to expand in the cylinders to push the piston to the end of the cylinder. When the reverse lever is at the extreme ends of the quadrant, the valve receives full stroke. As the lever is moved toward the center, the valves cut off sooner, until finally in the center notch, the valves don’t move at all (or very little). Positioning of the reverse lever is critical, as it affects the quantity of steam, water and coal consumed. The ability to set it in the right spot has a great deal to do with one’s reputation as a good engineer.

In theory, the locomotive is best operated with the throttle wide open and the reverse lever set as close to center as possible. This allows maximum steam flow through the throttle and superheater, making very hot, dry steam and also allowing for its maximum expansion in the cylinders. In reality, the only places on the C&TS where one can work the engine with a wide-open throttle is on the steep side of Cumbres or, if one has a long train (15 or more cars) coming west up from Los Pinos. The remainder of the time, you work the engine with a partially open throttle and the reverse lever set two to four notches down from the center. Each locomotive is different, and the valves timing events vary greatly among them (we’re talking variations in valve movement of less than one-eighth of an inch making a large difference in how the engine runs.) Some locomotives (489 and 463 for example) will run two notches from center. Others, such a 488, need to be four notches ahead. This is determined sby listening to the exhaust. Hooked up

too high, the exhaust gets an off-beat, lame sound. If it’s set too low, the engine sounds like it’s laboring too hard.

## Running Up to Cumbres

Running up the steep side of Cumbres—despite what one might observe—is actually a fairly simple process. The throttle is run wide open and the reverse lever is moved forward to the point that the locomotive will create the power to move the train at the desired speed. However, running the reverse lever one or two notches too far ahead will result in losing water or steam (or both.) When running at a normal pace, 10–11 mph, the reverse lever is never more than nine notches ahead of center. (Rule of Thumb: find the highest notch at which the engine will run, then add 5 notches.) Most days, one would run in the six-to-seven notch range, reserving the lower notches for heavy, one-engine trains. A very important point to remember is that as the speed comes up, so does the reverse lever, otherwise your fireman will think rather poorly of you. (How is that for a “Grand Understatement?”)

Some of my worst firing trips were on relatively light double-headers where the engineer “ran her in the same notch I did yesterday.” The difference was, however, yesterday he had a heavy train and made 11 mph. Today he had much lighter train and made 15 mph. I managed to keep the steam up. However, despite the injector running at maximum all the way up the hill, the water got too low and the engineer’s injector has to be used, which knocked the steam down. Bad day. I was not happy and, yes, I did think poorly of my engineer. This inspired me to tell the enginemen I trained, “If you have to run both injectors to keep the water up, you are trying to beat the locomotive into the ground!” (I can see the email virtual sneers coming from my former co-enginemen as I write this.)

Running westbound from Antonito to Cumbres requires considerably more skill and finesse. The first twenty miles from Antonito to Big Horn are a very consistent 1.4%. If you have decent sized train (eight cars or more) it is possible to set the reverse lever in the “company notch” (the highest notch the engine will run well, giving the best fuel and water economy.) Set the throttle, sit back and enjoy the ride. Listen to the engine do its work.

From Big Horn on, the grade is a series of stair steps and fairly consistent throttle adjustment is necessary. Oddly enough, in the most rugged part of the Railroad, there are over eight miles of level track from just east of Rock Tunnel to MP 323.5 (east of Los Pinos). The Railroad climbs only six feet in this distance. In reality, it probably gains and loses it several times, but it is possible to set the throttle and leave it for a few miles at time.

## Braking and Controlling Downhill Speed

So far, we’ve covered the easy part. More important, however, than getting the train moving and keeping it going, is getting



The K-36 helper’s engineer backs No. 488 into the wye at Cumbres before returning to Chama.

Photo: Chris James, October 8, 2007

it stopped and controlling its speed on long, downhill grades. The locomotives have two brake valves: the small brake valve is the independent brake which controls the brakes on the locomotive and tender. The larger valve is the automatic brake, which sets and releases train brakes, as well as the locomotive and tender brakes. When operating a locomotive without a train, or when switching, the independent brake is used. When running on the road with a train, the automatic brake is utilized.

Running downhill is a totally different art form. One has to be constantly aware of small changes in speed, changes in grade and the presence of curves, all of which affect how a train rolls down grade. Curves are a great help holding the train back on the steep grades as are short sags. On the eastern side of Cumbres, frequent and light (five pounds or less) sets and releases are done. It takes longer for the brakes to release after they are set than it does to set them. Therefore, it becomes a balancing act of setting and releasing.

An engineer soon becomes aware of one mph changes in speed and subtle changes in how the train pulls on the tender. It is necessary to learn every curve and tangent on the Railroad, especially between Osier and Big Horn. The stair-step profile requires constant vigilance and knowledge of where to set and where to release the brakes, where to pull the train and where to let it drift.

Controlling slack action in the train is an important skill. Within the couplers and draft gear of each car are six to nine inches of free slack. In starting a 20-car train with the slack bunched, the head-end will move about fifteen feet before the rear-end does. As the train rolls down the grade, the train will bunch up against the locomotive, as the cars will roll easiest. Setting the brakes will stretch the train out. A rapid run out of slack damages draft gear, puts passengers on the floor, knocks coffee pot over in the snack car, etc. By using light, short sets and releases, the train stays stretched, as the brakes are not released long enough to allow the consist to bunch up.

Pulling the train stretches it from front to back. Braking the train stretches from back to front. Slowing the train or starting down grade, the brakes are set before the throttle is closed, keeping the train stretched. Much depends on the engineer's ability to judge where the slack is in his train. Visiting engineers who work with "real" passenger equipment are often amazed with the smooth ride we give to the trains we pull.

Dropping down the 4% grade from Cumbres to Chama is not that difficult once you get used to it and once you understand the ominous fact that if you make a mistake, it could kill you or your precious cargo. All retainer valves are set on the cars. These valves hold air pressure in the brakes when the brakes are released, allowing the engineer to release and recharge the brake system. Normally, 10-to-13-pound sets are made. After the set slows down the train a bit, the brakes are released and recharged. As the air is slowly released out of the brake cylinder through the retainer valve, the train will stop slowing, hold its speed and then begin to speed up. The tricky part is to reset the brakes before the speed rises but allow time for the brakes to recharge. There is a delay before a set be-

comes evident in slowing the train. Sometimes, one has to have patience and faith that the set will take hold. Making the set too hard will cause the train to slow too rapidly. Releasing the brakes too soon will cause the need for a reset before they can recharge. Not getting a full recharge will cause the next set to use more air to achieve the same results. If this continues, eventually the train "runs out of air," and runs away down the grade. Therefore, maintaining the delicate balance is extremely important.

All in all, nothing beats knowing the road you're running on and the equipment you are operating. It is impossible to relate anything but a small portion of what one needs to get a train across a serious mountain railroad like the Cumbres & Toltec. In the 17 years I ran there, I was always learning new ways to do something. As the late Ben Greathouse used to say, "The day you stop learning is the day you retire."

No truer words were ever spoken.



**Earl Knoob** spent forty-one years as a railroader, thirty-five of which involved steam and/or diesel excursion trains. Since then, he has "worked for, or was



somehow involved with," nineteen different railroads stretching from Hawaii to Pennsylvania, some multiple times.

He started at the C&T in May, 1981, as a shop mechanic and by August was firing three days a week. He added "Brakeman" to his resume in 1982 and the following year was promoted to Engineer. In 1989, he was promoted again, this time to Trainmaster.

After a brief time during 1990-91 at the Roaring Camp & Big Trees tourist railroad in California, he returned to

the C&T as Safety Compliance Officer and later, superintendent of Operations. In 1997 when a new operator was hired, "I saw serious problems coming. I had to leave for my own sanity." In 2000, now a under different operator, he returned to the C&T and stayed until the Forest Service shut down the line for five weeks in 2002 because of fire danger.

Earl retired from full-time railroading in January 2019, and moved back to his semi-native Phoenix, Arizona. He still keeps his hand near a throttle by working part time for a 15-inch live-steam operation in Scottsdale, Arizona, and doing some volunteer work for the Nevada Northern Railway Museum in Ely, Nevada.





A PORTFOLIO OF K-36 LOCOMOTIVES ON THE D&RGW AND THE C&TS

All photos are from the FCTS Dorman Collection. Photographers credited if known.



# K-36 483

## RETURNING TO HER FORMER GLORY!



Photo: Chris James, 2009



by Ben Sargent and Robert Schoen

Photo: Don Atkinson, 2023

*With the restoration nearly complete, this 100-year-old beauty now rests comfortably in the Chama yard, a far cry from her appearance over by the shops during her "out to pasture" period in 2004.*

Photo: Don Atkinson, 2023 Inset photo: Curt Biamchi, July 1, 2004

The Cumbres & Toltec began running passenger trains over the 64-mile segment of the Rio Grande's storied San Juan Extension between Chama and Antonito in 1971, and the first D&RGW-donated engine to get up steam was K-36 Class No. 483. For the first three years of excursion operation, 483 and her sister, 484, were the only locomotives in operable condition.

The 483's last years on the Rio Grande were exceptionally hard-working and other engines came online for the Railroad AIInn 1977, after fifty-two years having worked, been wrecked (see page 21), rebuilt and put back in work again, worn and tired 483 was taken out of service for her federally required 1,472-day inspection of tubes and flues she was sidelined. It was fully expected that she would return to service when the inspection was completed.

But in 1977 the C&TS's engine-servicing facilities were basic at best, and lacked the excellent shop facilities that were built later. The 483 was parked while attention was given to other locomotives, sidelined on a track outside the current engine house. There she sat for the next thirty-six years, a source of spare parts.

She remained out of service until an idea arose from Roger Hogan to put her on static display in recognition of her historic role as first locomotive on the C&TS roster.



In the early years of the 20th century, the Denver & Rio Grande Western began beefing up the operations of its narrow-gauge operations spread across Colorado and New Mexico. New bridges

were built, track was improved, the entire freight-car fleet was overhauled, and most strikingly, a whole new generation of steam locomotives arrived to supplant the smaller engines that had powered the narrow gauge for years.

The new fleet, built by Baldwin and Alco, were all of the 2-8-2 Mikado wheel arrangement and designated in four different classes according to their pulling power. One of the new classes consisted of ten new Mikado locomotives, numbered 480 to 489, each weighing 187,100 lbs with 36,200 pounds of tractive effort and wee thus designated a Class K-36. Included in the delivery was Baldwin Production Number 58584, D&RGW 483. Delivered in April, 1925, she and the rest



Photo John E. Horan, 1955, FCTS RD116-023



of the new motive power went to work all over the Rio Grande's narrow-gauge territory.

By 1968, freight traffic declining and the Rio Grande wanted to abandon all of its narrow-gauge trackage except the historic—and popular—Silverton Branch. But with heavy lobbying from locals and rail-preservation interests, the legislatures of Colorado and New Mexico bought the 64 miles of track between Chama and Antonito and the Cumbres & Toltec Scenic Railroad was born.

Along with the right-of-way, the C&TS inherited a variety of deteriorating freight and maintenance-of-way equipment, and two K-36 class engines, 483 and 484. The 483 was first to be readied for service, and pulled the first C&TS train in 1971. Those two engines powered the entire operation for three years until more engines could be readied for service.

In 2013, the work on restoring 483 as a static display, *Friends Project 1186*, began with a volunteer crew under the direction of Dan Sandt. They were assisted with technical help from Mike Thode of the C&TS's staff were tasked with the cleaning, painting and repairing the engine.

The current 483 crew took over the effort in the summer of 2014. With the exception of 2020, the crew worked in Chama for a week every summer, laboring on the hundreds of little projects needed to return the K-36 to all of its period glory



Photos: Friends Chronicling Staff and Robert Schoen

2024 was the 11<sup>th</sup> year of the restoration team, now co-led by Ben Sargent and Robert Schoen. Along with a dedicated and skilled group of Friends of the Cumbres & Toltec volunteers (see participant list on page 21) who have gathered every summer, have contributed hours of time to make K-36 483 a silent memorial to all the hard-working steam power that has kept the C&TS a living artifact of railroad history.

Since the 483 restoration began, the crews have prepped, painted and lettered the entire engine, replaced numerous parts as they could be scavenged around the Chama yard. This included replacing the pilot, some of the running gear, a firebox door, journal covers, running boards, handrails, cooling pipes, sand dome and air reservoirs on either side of the engine, all missing part needed for a realistic restoration.

They refurbished and repaired woodwork, installed a wooden pilot beam to support custom-built steel footboards and fabricated prototypical replacement components that had been pilfered from the locomotive since 1977.

A major focus has been inventorying and adding missing running gear to the engine. Even the smallest repositioning moves require working running gear and rod and pin installation.

In 2016, the engine was moved from its spot outside the Chama engine house to a new location further north and across the yard with better



surfaces and clearance for working on varied parts of the restoration effort.

In the summer of 2017, volunteers also rebuilt 483's headlight, now shining during each Project 1186 work session from its appointed place on the top of the smokebox. (It is stored for security reasons after each session.) They replaced cab seats, re-glazed, windows, and replaced the rusted jacketing on the cylinder castings with new metal.

A retired K-36 tender was chosen for 483 by C&TS management in 2019, and gingerly hauled from Chama's old sheep-dip track and mated to the engine. The tender is a major project unto itself, including stripping, painting and lettering, reconstruction of some of the steel structure, and replacement of the wooden tender decking.

When the locomotive was moved from the engine house to its present location across the yard, the only connecting rods were the intermediates between Driver #2 and #3. By the time the dust settled, Drivers #1 and #4 were wildly out of correspondence with the other drivers and needed to spun back to the correct alignment. We were struggling with a method to spin driver #4 with the full weight of the engine on the drivers. This is where the mechanical expertise of our crew member, the late Chuck Armstrong, came in. Chuck's solution was to jack under the leaf springs to unload the driving boxes. That done, we could easily spin the driver to its proper position.

Last year, we again used Chuck's technique to spin Driver #1 the 180-degrees to the proper correspondence. In the end we were successful in adding a forward connecting rod to link up Drivers #1 and #2.

At the end of 2024's eleven-week session, the crew began inventorying and adding missing pieces of the running gear. We found a lot of gear stored in Boxcar 3090 and had it positioned close to the 483. We spent a full day identifying and organizing the contents of the car.

Over those eleven years, "Project 1186" has also





completed some of the usual maintenance items, such re-painting the boiler courses, the firebox side sheets and the cab.

Now painted and lettered, 483 *almost* looks like it just rolled out of Baldwin Locomotive Works in 1925! Lots of little details remain, but K-36 483 sure looks like it's ready to haul freight and passengers over Cumbres Pass!



### K-36 483 Restoration Crew, 2013–2024

Dan Sandt—Team Leader  
Ben Sargent—Team Leader  
Dr. Robert Schoen—Team Leader  
Chuck Armstrong  
Schaun Auckland  
Bill Bayne  
Dee Bayne  
Dudley Bayne  
Robert Brigham  
Raymond Hoppe  
Brad Joseph

Rick Kroytz  
Marc Opperman  
Dan Robbins  
Dylan Sellers  
Kailey Sellers  
Ed Sargent  
LuEllen Schoen  
Dave Shannon  
Eileen Shannon  
Larry Springer  
Mike Thode

### Railroading wasn't always "romantic."

Like other locomotives on the D&RGW and the C&TS, the K-36 locomotives had their share of accidents. In the early days, light rail and poor maintenance often lead to disaster. By the time the K-36s came along in 1925, safety measures and inspections had improved substantially. Still, that wasn't enough for a locomotive to end up in the ditch (or the turntable pit) if something went wrong. Fortunately, few photographs show K-36 locomotives in trouble.



In 1955, D&RGW 485 rolled down the Salida Roundhouse tracks and overturned in the turntable pit. Because Salida was about to be fully converted to standard gauge, 485 was considered a total loss and was scrapped.  
Photo by Neal R. Miller, FCTS RD062-027



Double-heading downhill with 494 on September 27, 1958, D&RGW 483, jackknifed east of Bocea, Colorado. Tragically, Fireman Paul Mayer was killed in the accident. The locomotive looks like a total loss but was rebuilt.  
Photo by Andy M Payne, FCTS RD061-057



While clearing snow and ice on April 25, 1999, C&TS 484 (lettered for D&RGW photo charters) hit ice in the flangeway and derailed just west of the Los Pinos tank. Fortunately no one was injured but the engine was close to rolling over. Due to damage, it did not see service again until 2004.  
Photo by John B. West, FCTS, JW02-012





## Friends Moonlight Wine Train Charter Saturday, August 2nd, 2025

*The menu will feature bacon-wrapped petit filets,  
baked potato, salmon with wild rice, seared green beans,  
fresh rolls and assorted deserts.*

**Parlor Car**—20 seats available, price \$215/person

**Premium Car**—20 seats available, price \$200/person

**Deluxe Car**—24 seats available, price \$180/person

**Coach Cars**—160 seats available, price \$110/person

*The Wine Train Charter will depart the Chama station  
Saturday August 2ND, 2025 at 5:30PM, and return to  
Chama at approximately 11:30PM.*

**Contact the Friends Office, 505-880-1311 for reservations!**

**DON'T WAIT! JOIN THE  
FRIENDS OF THE C&TS!**



**To join, send your contact  
information to:**

**Friends of the C&TSRR, Inc.  
4421 McLeod Road NE, Suite F  
Albuquerque, NM 87109**

(Please Print)

**Name** \_\_\_\_\_

**Address** \_\_\_\_\_

**City, State, Zip** \_\_\_\_\_

**Email** \_\_\_\_\_

or

**Call the Friends Office at  
505-880-1311**

or

**Visit the Friends Website at  
[www.friendsofcumbrestoltec.org](http://www.friendsofcumbrestoltec.org)**

or

**Scan the QR Code above to go  
directly to the application page!**

**We accept:**



## D&RG EXPRESS CAR 163 RESTORATION AT THE COLORADO SPRINGS CRF

*Text and photos by Don Atkinson from the January through March Work Sessions  
at the Colorado Springs Car Restoration Facility*



Work on Express 163 continued in December and through the winter and into the spring, with the exception of third session in January, cancelled for very cold weather. In December, the crew fitted additional spacer blocks between the outer, intermediate and center sills and cut notches in some of the blocks where the truss rods will pass through. They also removed the old needle beams by cutting off the old bolts and test fitted the new white oak needle beams to the car. The needle beams are used in conjunction with the truss rods to support the center of the car.

In February, the weather was finally nice and a lot of work was accomplished. Work included installing the temporary floor inside the car, finished installing the raised platform on the north side of the car, assembling scaffolding on both side platforms and removing the interior lights installed in 1937.







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Whistle in the New Year!

### 2025 Friends of the Cumbres & Toltec Calendar!

**Order one for you and one for every one of your railfan friends!**

How can you rely on a *digital* calendar when you are working with a *steam* railroad? Keep track of all your important dates (like the work sessions you'll be attending) in analog mode with your **2025 C&TS Calendar**, filled with a dozen 12x12-inch photographs along with two extra photos that accompany every month of the year, all taken by some of the Friends' best photographers. **Order yours today!**

Quantity\_\_\_\_(\$20 each, shipping included) For shipping outside the USA, email [info@cumbrestoltec.org](mailto:info@cumbrestoltec.org) for postage and total. Make **Checks** Payable to: **Friends of the Cumbres & Toltec Scenic Railroad, Inc., 4421 McLeod Road NW, Albuquerque, NM, 87109**

Or order from the Friends of the C&TS Gift Shop at <https://friendsofcumbrestoltec.org/gift-shop/>



### New Promotional Brochure for the Friends!

The **Friends of the C&TS** is proud to announce a new promotional brochure for the recruitment of new members, volunteers and donors! It will be made available to passengers and visitors, and at participating train shows around the country. The eight-page booklet describes the role of the Friends, a bit of their history and shows examples of the variety of work sessions available to all volunteer skill levels. Check out this unique live flipbook at:

<https://tinyurl.com/fctsrpromo>

*Send this link to your railroad friends so they can discover the Friends too.*

### Help Wanted for the Friends Historic Photograph Collection

The Friends Historic photo Collection staff is in need of volunteers to process Ernie Robart's many photos of the standard gauge Santa Fe and BNSF lines.

We are looking for people interested in looking at photos, analyzing the content, scanning, and entering the data into our MS Access computer database. We work with 35mm slides and various sizes of negatives and prints that make up the collection.

Work is done in the Friends Albuquerque office during normal business hours, 9AM–5PM Monday through Friday. It would be most helpful if four or more hours could be offered each week. A lot can be accomplished in that amount of time.

Although basic railroad knowledge is helpful, it is not essential and can be learned over time, simply by working with the images.

Computer knowledge is not essential as the work is done on computers that are not overly complex and can be learned with a small amount of training from our current volunteers. We use Windows OS as a base so some knowledge of Microsoft Office would be helpful.

If you can assist us, please contact Wes Pfarner at [wes.pfarner@comcast.net](mailto:wes.pfarner@comcast.net) or Dave Ryerson at [deryerson@gmail.com](mailto:deryerson@gmail.com) for more information.



Ernie Robart, 1967

EST. 1880

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*Members of the restoration, painting and lettering crews all came together to celebrate the numbering of the newly painted tender for K-36 483. How did it used to look like? Check out page 18! Photo by Michael Mee, June 16, 2022*