

**DO IT
THE SAFE WAY
— OR DON'T DO IT**

TERMINAL SUPERINTENDENT

J. W. WELSH El Paso

**ASSISTANT
TERMINAL SUPERINTENDENTS**

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W. G. LARSON El Paso
E. BROWN El Paso

TRAINMASTERS

H. C. HANSEN Lordsburg
H. R. RUTLER Tucson
W. H. TANNER Tucson
J. E. KOCH Phoenix
H. L. CLEPPER Tucson

ASSISTANT TRAINMASTERS

J. G. ALANIZ Hayden
G. A. TONCHEFF Tucson
F. S. ALTERGOTT Tucson
L. F. RODRIGUEZ El Paso
A. E. BEDNAR Phoenix

ROAD FOREMEN OF ENGINES

T. H. HOLLINGSHEAD Tucson
J. A. HURLEY Tucson
I. L. WHITT, SR. El Paso
K. L. SHURLEY El Paso

CHIEF TRAIN DISPATCHER

H. L. ANDERSON Tucson

GENERAL YARDMASTER

L. RIETZER El Paso

**SOUTHERN PACIFIC
TRANSPORTATION
COMPANY**



**TUCSON DIVISION
TIMETABLE**

7

**EFFECTIVE SUNDAY, APRIL 24, 1977
AT 12:01 A. M.**

**MOUNTAIN STANDARD TIME
FOR THE GOVERNMENT AND INFORMATION
OF EMPLOYEES ONLY**

R. L. KING,
Vice President and General Manager.

**W. J. LACY,
J. D. RAMSEY,**
Regional Operations Managers.

C. T. BABERS,
Assistant General Manager.

J. J. WILLIS,
Asst. Vice President—Transportation.

J. W. BREEN,
Manager Operations Planning & Control.

J. J. TIERNEY,
Superintendent.

**R. V. WILLS,
F. J. PHILLIPS,
P. M. McNAMEE,**
Assistant Superintendents.

Timetable 6 eff 31 Oct 1976
8 30 Oct 1977

TUCSON DIVISION TIMETABLE No. 7, APRIL 24, 1977

GILA SUBDIVISION

EAST- WARD	Nogales Branch	Station Number	WEST- WARD
STATIONS SIDING CAPACITIES AND FACILITIES			
986.6	Yd. Lmts. { TO-R PFE YARD BKIYPQ ↑ TUCSON BKPQ Yd. Lmts. 15.5 15.6	52280	62.9
983.9		52270	63.0
1002.4	SAHUARITA	52322	47.4
1021.1	Yd. Lmts. 18.7 AMADO	52344	28.7
1049.8	TO-R 28.7 NOGALES BKPQ	52370	0.0
PFE Yd. (62.9) TUCSON (63.0)			

ADDITIONAL STATIONS			
Capacity and Direction of entry into Spurs	Mile Post	NAME	Station Number
1450W ..	746.6	Blaisdell..... (Spur)	50030
588E ..	760.2	Ligurta... No. 1 Track (Spur)	50070
450W ..	850.3	Smurr.....	52078
882E ..	921.0	Seco..... (Spur)	52167
1350 ..	933.1	Eloy.....	52179
..	953.5	Avra..... (Spur)	52221
1050E ..	962.2	Marana.....	52231
..	968.6	Plata..... (Spur)	52241
1300 ..	977.4	Jaynes.....	52254
..	981.2	Petrie..... (Spur)	52263
Nogales Branch			
..	Y 992.4	Aldona..... (Spur)	52312
588E ..	1010.4	Continental..... (Spur)	52332
..	1034.2	Otero.....	52357

PHOENIX SUBDIVISION

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EAST- WARD	STATIONS	Station Number	WEST- WARD
SIDING CAPACITIES AND FACILITIES			
Chandler Branch			
923.6	Yd. Lmts. { 3087 Yd. Lmts. 19.6 (19.6)	51187	19.6
943.2		51199	0.0
Distance from West Chandler			
Tempe Branch			
915.3	Yard Limits { 2.4 1.5 3.8 (7.7)	51172	7.7
917.7		51175	5.3
919.2		51177	3.8
923.0		51179	0.0
Distance from Litchfield Park			
Litchfield Branch			
889.3	Yd. Lmts. { 5.4 (4.7)	51110	4.7
894.0		51115	0.0
Distance from Hayden			
Hayden Branch			
948.9	2100 Yd. Lmts. P R 10.1 (51.3)	51240	51.3
959.0		51310	41.2
987.8	Yd. Lmts. 28.8 P Yd. Lmts. 12.4 BKPQ TO-R (51.3)	51340	12.4
1000.2		51360	0.0

ADDITIONAL STATIONS			
Capacity and Direction of entry into Spurs	Mile Post	NAME	Station Number
Chandler Branch			
..	925.4	Tremaine.....	51190
3875 ..	929.3	Chandler.....	51193
..	931.0	Pozo..... (Spur)	51195
1630 ..	934.3	Serape.....	51197
Hayden Branch			
..	1003.5	Winkelman..... (Spur)	51380

TUCSON DIVISION TIMETABLE No. 7, APRIL 24, 1977

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PHOENIX SUBDIVISION

EASTWARD			Mile Post Location	STATIONS SIDING CAPACITIES AND FACILITIES			Station Number	Distance from Picacho	WESTWARD		
FIRST CLASS									FIRST CLASS		
2 Passenger									1 Passenger		
Leave Mon., Wed. & Sat.									Arrive Sun., Wed. & Fri.		
AM	4.06		770.0	WELLTON ^P			50080	208.4	AM	2.08	
	4.18		780.9	3453	10.9	ROLL	51012	197.5		1.58	
	4.40		802.5	3686	21.6	KOKA	51034	175.9		1.37	
	4.59		822.3	3688	19.8	HYDER	51053	156.1		1.17	
	5.18		841.1	3680	18.8	SADDLE	51063	137.3		12.57	
	5.28		851.0	3551	9.9	GILLESPIE	51068	127.4		12.47	
	5.38		861.3	3628	10.3	ARLINGTON ^Y	51073	117.1		12.37	
	5.42		865.7	3537	4.4	DIXIE	51078	112.7		12.33	
	5.52		875.7	3707	10.0	BUCKEYE ^P	51088	102.7		12.23	
			889.3	LITCHFIELD JCT. ^P			51110	89.1			
	6.06		889.7	3595	0.4	LITCHFIELD ^P	51120	88.7		12.09	
	6.10		893.0	4825	3.3	CASHION	51123	85.4		12.05	
	6.12		895.7	TOLLESON			51126	82.7		12.02	
	6.15		898.1	3575	2.4	FOWLER	51128	80.3		11.59	
	6.23		904.0	3661	5.9	23rd AVE. PHOENIX	51136	74.4		11.51	
s	6.40		906.0	PHOENIX ^P			51140	72.4	s	11.45	
	6.45		907.0	TO-R PHOENIX YARD ^{BKYPQ}			51160	71.4		11.18	
	6.52		911.1	KENDALL			51164	67.3		11.12	
	6.59		914.4	3835	3.3	TEMPE ^P	51170	64.0		11.07	
	7.09		921.8	MESA ^{KPQ}			51185	56.6		10.58	
	7.12		923.6	McQUEEN ^P			51187	54.8		10.54	
	7.16		927.0	GILBERT ^P			51205	51.4		10.50	
	7.27		937.2	GERMANN ^P			51218	41.2		10.41	
	7.38		948.9	MAGMA ^P			51240	29.5		10.30	
	7.50		960.7	COOLIDGE			51415	17.7		10.19	
	8.10		962.0	PICACHO ^Y			52200	0.0		10.00	
	AM		979.7	(208.4)						PM	
	936.7		936.7							PM	
Arrive Mon., Wed. & Sat.									Leave Tue., Thur. & Sat.		
2									1		

RULE 5. Phoenix Yard: Time applies for eastward first-class trains at 6th Street, MP 906.7 and westward first-class trains at 16th Street, MP 907.8.

ADDITIONAL STATIONS			
Capacity and Direction of entry into Spurs	Mile Post	NAME	Station Number
780W ..	793.0	Growler.....	51024
760W ..	812.38	Horn.....	51044
3250 ..	900.4	Pipeola.....	51130
.. ..	900.8	Cotpro.....	51132
.. ..	902.0	Campo.....	51134
3240 ..	909.43	Aristuc.....	51162
.. ..	911.8	Tovrea.....	51166
.. ..	912.4	Auction..... (Spur)	51167
.. ..	912.9	Yeso.....	51169
.. ..	917.1	Normal Jet.....	51182
.. ..	932.0	Higley.....	51211
.. ..	938.1	Rittenhouse.....	51223
.. ..	941.6	Queen Creek.. Yd. Lmts.	51229
.. ..	966.4	Randolph.....	51421

LORDBURG SUBDIVISION

EASTWARD

WESTWARD

FIRST CLASS

FIRST CLASS

2 Passenger	Mile Post Location	<p>STATIONS SIDING CAPACITIES AND FACILITIES</p> <p>TO-R TUCSON BKPQ 2.7 TO-R PFE YARD BKIYPQ E-6689 8.2 W-6485 WILMOT 4226 27.4 P MESCAL 8099 4.6 CHAMISO 4.3 YP BENSON 8429 2.8 FENNER 9197 5.2 SIBYL 8239 5.7 TULLY 15306 6.7 DRAGON 8415 10.0 COCHISE Y 8379 10.8 WILLCOX P 8480 7.9 RASO 9947 8.4 LUZENA 8209 7.4 BKYPQ 8236 8.2 OLGA 8017 8.2 SAN SIMON 8028 7.6 VANAR 10777 6.9 STEINS 8324 4.8 MONDEL 8360 7.1 GARY Yd. Lmts. 7.5 BKYPQ TO LORDSBURG 8378 4.7 ULMORIS 8457 6.0 LIBSON 8362 8.0 SEPAR 8385 10.0 WILNA 8371 11.0 GAGE 8361 10.0 TUNIS 8309 10.0 KPQ TO DEMING 8352 11.5 CARNE 8359 9.5 AKELA 8376 9.0 DONA 8347 10.0 ADEN 8352 11.0 AFTON 8380 10.0 LANARK 8388 10.0 STRAUSS 9692 6.5 LIZARD 4.4 ANAPRA TO-R KIPQ EL PASO (Tower 196) R BKIP EL PASO (Union Depot) BKIYPQ EL PASO (Cotton Ave.)</p>	Station Number	Distance from El Paso	<p>1 Passenger</p> <p>Arrive Tue., Thu. & Sat.</p> <p>PM 9.00</p> <p>8.38</p> <p>7.58</p> <p>5.50</p> <p>4.48</p> <p>3.15 PM</p> <p>Leave Tue., Thu. & Sat.</p>
Leave Mon., Wed. & Sat.					
AM 9.20	983.9	52270	310.7		
	986.6	52280	308.0		
	994.8	53010	299.8		
	1022.2	53035	272.4		
	1023.6	53041	267.8		
AM 10.38	1028.2	53050	263.5		
	1032.5	53205	260.7		
	1032.6	53212	255.5		
	1035.4	53219	249.8		
	1035.8	53227	243.1		
	1041.0	53238	233.1		
	1046.7	53251	222.3		
	1047.2	53259	214.4		
	1053.9	53268	206.0		
	1063.9	53280	198.6		
	1074.7	53410	190.4		
	1082.6	53419	182.8		
	1091.0	53428	175.2		
	1098.4	53439	168.3		
	1108.6	53446	163.5		
	1114.2	53455	156.4		
	1121.8	53470	148.9		
	1128.7	54115	144.2		
	1128.9	54122	138.2		
	1133.7	54133	130.2		
	1140.8	54138	120.2		
	1148.3	54152	109.2		
	1153.0	54170	99.2		
	1159.0	54200	89.2		
	1167.0	54226	77.7		
	1177.0	54239	68.2		
	1188.0	54248	59.2		
	1198.0	54259	49.2		
	1208.0	54271	38.2		
	1219.5	54277	28.2		
	1229.0	54282	18.2		
	1238.0	54287	11.7		
	1248.0	54290	7.3		
	1259.0	54297	1.7		
	1269.0	54297	1.7		
	1279.0	55042	0.0		
	1285.5				
	1289.9				
	1317.7				
	1323.3				
	1295.9				
	1323.3				
	1295.9				
	1297.6				

Automatic Block Signal System

Centralized Traffic Control

Centralized Traffic Control

Yard Limits

No. 2 Track

No. 1 Track

(312.6 Eastward) (311.1 Westward)

Capacity and Direction of entry into Spurs	Mile Post	NAME	Station Number
..	1003.3	Vail No. 1 Track.....	53012
1029W ..	1003.3	Vail No. 2 Track (Spur)	53013
..	1012.6	Pantano-No. 2 Track...	53023
.. 250E ..	1012.9	Marsh-No. 1 Track (Spur)	53029
12985E ..	1208.7	Sage..... (Spur)	54213
..	1320.9	Icehouse Crossover.....	..

Arrive Mon., Wed. & Sat.

2

Leave Tue., Thu. & Sat.

1

TUCSON DIVISION TIMETABLE No. 7, APRIL 24, 1977

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LORDSBURG SUBDIVISION

EAST- WARD ↓	STATIONS SIDING CAPACITIES AND FACILITIES	Station Number	WEST- WARD
	Douglas Branch		Distance from Douglas
Mile Post Location			
1032.6	Yd. Lmts. R BENSON YP	53050	78.6
1058.8	Yd. Lmts. 26.2 LEWIS SPRINGS Y	53129	48.2
1085.0	Yd. Lmts. 26.2 BISBEE JCT. Y	53155	22.0
1107.0	Yd. Lmts. 22.0 DOUGLAS BKYPQ	53190	0.0
	(74.4)		
	Ft. Huachuca Branch		Distance from Ft. Huachuca
1058.8	Yd. Lmts. 1715 LEWIS SPRINGS Y	53129	12.0
1070.8	Yd. Lmts. 12.0 FT. HUACHUCA	53140	0.0
	(12.0)		
	Bisbee Branch		Distance from Bisbee
1085.0	Yard Limits 1721 BISBEE JCT. YP	53155	5.7
1088.3	Yard Limits 3.3 CORTA	53157	2.4
1089.6	Yard Limits 1.3 WARREN	53162	1.1
1090.5	Yard Limits 0.9 LOWELL	53163	0.2
1090.7	Yard Limits 0.2 BISBEE	53165	0.0
	(5.7)		
	Don Luis Branch		Distance from Galena
1088.3	Yard Limits 1721 CORTA	53157	2.5
1089.8	Yard Limits 1.5 DON LUIS	53159	1.0
1090.8	Yard Limits 1.0 GALENA	53160	0.0
	(2.5)		
	Globe Branch		Distance from Miami
1098.4	Yd. Lmts. BKYPQ BOWIE	53280	133.8
1098.1	TO-R 39.4 SAFFORD	53322	94.4
1137.5	Yd. Lmts. R 84.0 GLOBE BKP	53376	10.4
1221.5	Yd. Lmts. TO 10.4 MIAMI P	53395	0.0
	(133.8)		

EAST- WARD ↓	STATIONS SIDING CAPACITIES AND FACILITIES	Station Number	WEST- WARD
	Clifton Branch		Distance from Clifton
Mile Post Location			
1148.3	Yd. Lmts. BKYPQ LORDSBURG	53470	69.9
1146.4	TO-R 18.9 SUMMIT	54010	51.0
1165.3	19.0 DUNCAN	54031	32.0
1184.3	380 2.6 FOX	54036	29.4
1186.9	18.3 GUTHRIE	54050	11.1
1205.2	1120 4.6 SOUTH SIDING	54062	6.5
1209.8	ABB 6.5 CLIFTON P	54070	0.0
1216.3	(69.9)		

ADDITIONAL STATIONS			
Capacity and Direction of entry into Spurs	Mile Post	NAME	Station Number
Douglas Branch			
882 ..	1039.8	Curtiss	53110
200E ..	1048.2	Fairbank	53118
.. ..	1052.4	Land	53112
.. ..	1042.4	Naco	53150
.. ..	1081.2	Paul Spur	53177
3038W ..	1096.74	Forrest	53175
2375 P	1096.9	Calumet (Yd. Lmts.) ..	53183
2872 P	1104.3		
Globe Branch			
700W ..	1145.6	Pima	53329
2450 ..	1176.8	Calva	53349
2000 ..	1201.0	San Carlos	53361
200W ..	1213.5	Cutter	53368
200W ..	1227.3	Burch	53387
Ft. Huachuca Branch			
882 ..	1068.9	Garden Canon	53135

TUCSON DIVISION TIMETABLE No. 7, APRIL 24, 1977

CARRIZO SUBDIVISION

Mile Post Location	EAST-WARD	STATIONS SIDING CAPACITIES AND FACILITIES	Station Number	WESTWARD				
				SECOND CLASS				
				Distance from Tucson	991 Freight	993 Freight	995 Freight	
1295.9								
1297.6		R EL PASO (Union Depot) BKIP TO-R 1.7 BKIYPQ EL PASO (Cotton Ave.)	54297	331.5				
1297.6		TOWER 47 IQ	55042	329.8	AM 7.55	PM 3.55	PM 11.55	
1301.5		3.9 P FORT BLISS	55070	325.9				
1302.3		8726 0.8 P PLANEPORT	55080	325.1	7.24	3.24	11.24	
1316.1		4897 13.8 P NEWMAN	55117	311.3	7.05	3.05	11.05	
1332.1		5013 16.0 P DESERT	55133	295.3	6.41	2.41	10.41	
1345.0		9100 Yd. Lmts. 12.9 P OROGRADE	55147	282.4	6.23	2.23	10.23	
1366.0		4604 21.0 P DUNES	55169	261.4	5.55	1.55	9.55	
1378.2		5359 12.2 P OMLEE	55185	249.2	5.37	1.37	9.37	
1382.8		9426 Yd. Lmts. 4.6 PQ TO ALAMOGORDO	55200	244.6	5.30	1.30	9.30	
1412.9		4882 30.1 P THREE RIVERS	55235	214.5	4.50	12.50	8.50	
1432.8		5318 19.9 P POLLY	55260	194.6	4.26	12.26	8.26	
1439.9		5580 Yd. Lmts. 7.1 PQ TO CARRIZO	55300	187.5	4.15	12.15	8.15	
1446.9		5073 7.0 P ROBSART	55309	180.5	4.02	12.02 PM	8.02	
1463.5		6186 16.6 P ANCHO	55327	163.9	3.40	11.40 AM	7.40	
1482.5		9000 19.0 P GALLINAS	55347	144.9	3.18	11.18	7.18	
1490.9		4911 8.4 P CORONA	55351	136.5	3.03	11.03	7.03	
1525.4		5803 Yd. Lmts. 34.5 PQ TO VAUGHN	55400	102.0	2.28	10.28	6.28	
1533.3		5148 7.9 P LEONCITO	55419	94.1	2.08	10.08	6.08	
1547.2		4985 13.9 P PASTURA	55433	80.2	1.50	9.50	5.50	
1558.5		5026 11.3 P ARABELLA	55445	68.9	1.33	9.33	5.33	
1568.3		5605 Yd. Lmts. 9.8 P SANTA ROSA	55500	59.1	1.18	9.18	5.18	
1577.4		5168 9.1 P LOS TANOS	55521	50.0	1.07	9.07	5.07	
1585.8		4821 8.4 P CUERVO	55532	41.6	12.55	8.55	4.55	
1594.7		4970 8.9 P NEWKIRK	55541	32.7	12.45	8.45	4.45	
1606.7		4948 12.0 P MONTOYA	55554	20.7	12.30	8.30	4.30	
1615.5		5380 8.8 P PALOMAS	55563	11.9	12.19	8.19	4.19	
1621.9		4927 6.4 P HARGIS	55574	5.5	12.10	8.10	4.10	
1627.4		Yd. Lmts. 5.5 BKYPQ TO-R TUCUMCARI	55580	0.0	12.01 AM	8.01 AM	4.01 PM	
		(331.5)			Leave Daily	Leave Daily	Leave Daily	
					991	993	995	

ADDITIONAL STATIONS			
Capacity and Direction of entry into Spurs	Mile Post	NAME	Station Number
W ..	1306.4	Tobin..... (Spur)	55105
1370W ..	1307.5	Tobin Safeway.....	55105
2665W ..	1312.6	Bunsen..... (Spur)	55111

DEFINITIONS

Holidays:

New Year's Day, January 1,
Washington's Birthday, third Monday in February,
Decoration Day, last Monday in May,
Independence Day, July 4,
Labor Day, first Monday in September,
Veteran's Day, November 11,
Thanksgiving Day, fourth Thursday in November,
Christmas Day, December 25.

Note. ADD:

Flammable Compressed Gas (FCG): also applies to Flammable Gas (FG).

RULE A. Current Rules and Regulations of the Transportation Department were effective October 31, 1976.

RULE C. First paragraph will not become effective until further notice.

RULE 1. Until further advice that equipment has been installed for purpose of setting "Standard Clocks," standard time will temporarily continue to be obtained, as in the past from authorized observatory through time checks.

RULE 21. Trains handling loads of excess dimensions covered by train order must be identified within CTC, Interlocking limits and on double track.

RULE S-72. Westward trains are superior to trains of the same class in the opposite direction.

RULE 81-A. Item (f) is revised to read:

(f) View of track for entire length of block to be occupied and to end of adjoining block in both directions.

RULE 81-A. Where electric or mechanical switch locks are installed, be governed by instructions posted in telephone booths, on doors or on housings of electric or mechanical switch lock.

RULE 98. At interlocked railroad crossings at grade, cars or engines must not be cut off nor left within interlocking limits in such a way as to foul any part of the crossing frogs.

RULE 102. Should a passenger train break in two or an emergency application of brakes occur while in motion on grade, head brakeman will immediately go towards rear, close angle cock at opening if train has parted, apply hand brakes, and turn up retaining valves on detached portion. After train is coupled air must be applied from engine before hand brakes and retaining valves are released.

If necessary to leave detached portion on main track, rear truck of detached portion on ascending grade or lead truck of detached portion on descending grade must be blocked or chained in such manner as to derail car should there be an uncontrolled movement.

RULE 103. General Order R-1 issued by the Arizona Corporation Commission October 10, 1973 requires compliance in the State of Arizona with the following:

In the event of any uncontrolled blockage involving more than one grade crossing and a peace officer is on the scene, primary consideration shall be given to the clearing of that crossing which, in the peace officer's judgment, will result in minimum delay to vehicular traffic.

Train or yard crew member of a train blocking a public crossing shall immediately take all reasonable steps, consistent with the safe operation of such train, to clear the crossing upon receiving information from a peace officer, member of any fire department, or operator of an emergency vehicle, that emergency circumstances require the clearing of the crossing.

In the event of any uncontrolled blocking not otherwise provided for in this rule, crossing shall be cleared with reasonable dispatch.

- A. When necessary to shove a railroad car or cars over a public grade crossing not having automatically controlled crossing signals, employees shall flag the crossing.
- B. When during normal train operations at night it becomes necessary to block a public grade crossing with standing railroad cars, and the crossing does not have automatically controlled crossing signals, flares or fuses shall, as soon as possible, be placed in the center of the roadway on both sides of the track at not less than ten (10) feet from the railroad car or cars to warn motorists that the crossing is occupied.
- C. Detached railroad cars containing explosive or hazardous material shall not be left standing on any grade crossing during normal train operations.
- D. It shall be unlawful for railroad employees to "drop" or "kick" railroad car or cars across a grade crossing unless the crossing is flagged by a flagman or traffic is restricted by automatic gate arms.

Arizona Revised Statutes relating to the blocking of crossings reads as follows:

"40-852. Allowing engine or car to remain upon public crossing; penalty

An engineer, conductor or other employee or officer of a railroad company who permits a locomotive or cars to be or remain upon the crossing of a public highway over such railway so as to obstruct travel over the crossing for a period exceeding fifteen minutes, except in cases of unavoidable accident, is guilty of a misdemeanor."

This Statute must be complied with by all concerned.

RULE 104-D. Running switches will be made only when in the judgment of the conductor it is necessary and with his personal supervision.

AUTOMATIC BLOCK SIGNAL SYSTEM

RULE 505. Where signal protection is provided for movements from an adjacent track to main track, push buttons and lights are installed in box near each of the two signals, with time-release feature, to clear signals on one track when the control circuit on the other track is occupied.

Train on main track to let train on siding pass may clear signal on siding by pressing button bearing number of signal on siding. Train on siding to let train on main track pass should not pass APPROACH CIRCUIT sign, but when necessary to do so, may clear signal on main track by pressing button bearing number of signal on main track.

Further instructions posted inside pushbutton box.

RULE 508. Is revised to read:

Except as provided in Rules 509, 663 or 744, when an automatic block signal governing movement ON SINGLE TRACK WITHIN YARD LIMITS displays stop indication, train or engine, after stopping, may proceed at RESTRICTED SPEED under one of the following conditions:

- (a) When a preceding train is seen in the block and intervening track is seen to be clear.
- (b) When view of track is clear to end of second block.
- (c) When no movement is seen or heard approaching, train or engine must be moved forward until leading wheels are past insulated joints at the signal and wait five minutes at that point.

RESTRICTED SPEED must not be exceeded until rear of train or engine has passed out of block.

LETTER-TYPE INDICATORS

RULE 705. For information concerning letter-type indicators in connection with Hot Box Detectors and their appurtenances, refer to Rule 827, All Subdivisions.

GENERAL REGULATIONS

RULE 812. Section entitled "Safety Rules," pages II-1 through II-12, and portion of section entitled "Emergency Procedures" on pages III-4 through III-6, contained in Amtrak's Manual of Instructions for Conductors and Trainmen in Amtrak Service, do not apply to employes of Southern Pacific Transportation Company.

RULE 825. At terminals where instructions require application of hand brakes on freight trains, outgoing crews must not release hand brakes until road engine is coupled and brake system charged.

Many new cars are equipped with truck mounted brakes. The hand brake is effective on these cars on "B" end only. It will be necessary to check "B" end of these cars to determine if hand brake has been released.

Rail skids are hung on posts at locations listed under subdivisions. When using rail skid it must be placed on rail and leading wheel of first car in descending direction run onto rail skid and hand brakes applied; if brakes are operative, before engine is detached. Train crews picking up cars from these locations must remove rail skid, return to proper location and lock in place where lock is provided.

RULE 827. Engines running light on descending grade without dynamic brake in operation must stop a sufficient length of time to permit wheel heat radiation if there is INDICATION OF OVERHEATING.

When trains are stopped by hot box detectors, dragging and/or derailed equipment detectors at locations where bridges, trestles, etc. are not provided with walkways train may be moved slowly ahead a sufficient distance to permit inspection.

DRAGGING AND/OR DERAILED EQUIPMENT DETECTORS

Where dragging and/or derailed equipment detectors are installed as listed under subdivisions, revolving red beacon will be mounted on Hot Box Detector House; on post or relay case adjacent to detector and will be normally dark. When dragging and/or derailed equipment detector is activated, the revolving red light will be displayed.

Unless otherwise provided revolving red beacon will apply to trains in both directions, and when activated enginemen or trainmen must stop train promptly in accordance with Air Brake Rule 5, Sec.D. And make inspection of train and track, advising train dispatcher of conditions found.

ROLLER BEARINGS LOOSE OR MISSING CAP SCREWS

During inspection by trainmen, if any roller bearing is found with one cap screw loose or missing and hot box detector has not been activated and check with tempilstick reveals no overheated condition, train may proceed to the next terminal where car must be set out.

Under the same circumstances, when two or more roller bearing cap screws are found loose or missing, train may proceed with caution to the first available track where car must be set out.

HOT BOX DETECTORS

Three basic types of Hot Box Detectors are utilized. Crew members are to be familiar with the types and locations of these detectors.

Hot box detector scanner sites have a white light continuously displayed on track side of instrument house, except when a hot bearing is detected, at which time light will start flashing. Crew members must be alert for the light and, when flashing, conductor and engineer must immediately orally compare observation when means of communication is available.

Absence of white light must be promptly reported to train dispatcher and does not require train inspection.

TYPE A: RULE 705. LETTER "H" INDICATOR WITH DIGITAL READ-OUT.

When letter "H" is illuminated or it is known hot bearing has been detected by crew member observing the flashing white light at scanner site, train must be brought to immediate stop and inspection made to determine that it is safe to proceed. Where possible, inspection must be made before passing over switches or structures. After inspection, train must not exceed 15 MPH from point of inspection until stop is made at location of readout locator and be governed by instructions posted inside case.

Member of crew must make a physical count of axles from rear of train to axle indicated by digital readout and when hot bearing is not located then all journals of car indicated by detector as well as five cars on either side of the car involved must be inspected.

Unless entire train has previously been inspected after stopping for detector, all journals of train must be inspected when "H" is illuminated provided any of the following conditions exist:

1. No count shown on readout locator.
2. Red light below readout mark "Locator Out of Service" is illuminated.
3. Digital readout locator displays erroneous indication such as a duplication of numbers.
4. Numbers displayed exceed the number of axles in train.

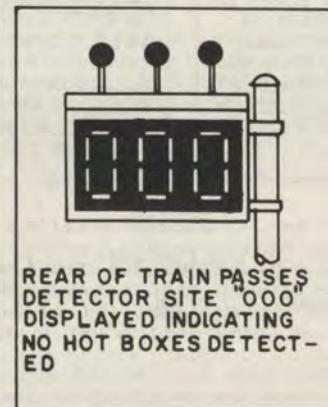
After inspection has been completed train dispatcher must be notified of condition found. When it is safe to proceed, member of crew must push button below indicator panel to cancel numbers on the indicator. Case door must be closed and secured with switch lock.

When letter "W" is displayed it is an indication that preceding train has stopped due to a hot bearing indication but has not cancelled out system. Following trains must stop and not proceed until light is extinguished or permission is obtained from train dispatcher. After stopping, speed of 10 MPH or more should be obtained if possible before passing over detector provided restrictions permit.

TYPE C. MONITOR DISPLAY BOARD WITH INDICATOR LIGHTS.

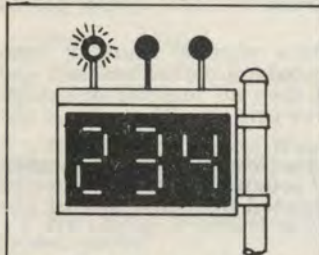
A Monitor Display Board and hot box indicator lights, as shown in diagram, are mounted on a signal mast at side of track. The display board is illuminated as train passes and will display zeros in the absence of a hot bearing. Two seconds after the train passes the detector, the display board will display numerals indicating the accumulated axle count from the hot bearing to the rear of the train.

Absence of any numerical display after passage of a train must be promptly reported to train dispatcher.

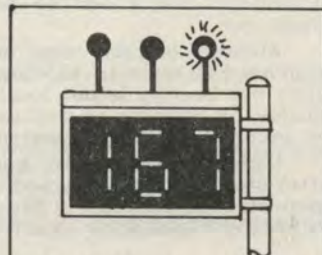


SPECIAL INSTRUCTIONS—ALL SUBDIVISIONS

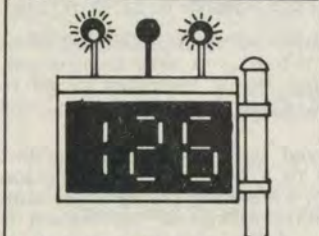
The indicator lights are normally dark, but when hot bearing is detected, will display flashing white aspect as illustrated below:



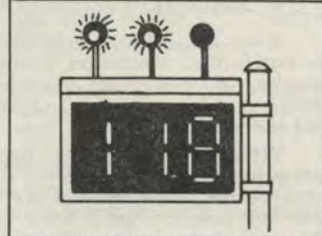
ONE HOT BOX ON RIGHT SIDE OF TRAIN IN DIRECTION OF MOVEMENT. AXLE COUNT (234) FROM REAR OF TRAIN. INSPECT ALL BEARINGS OF CAR INDICATED AS WELL AS EACH ADJOINING CAR.



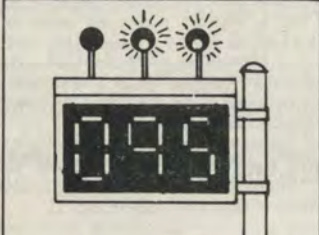
ONE HOT BOX ON LEFT SIDE OF TRAIN IN DIRECTION OF MOVEMENT. AXLE COUNT (167) FROM REAR OF TRAIN. INSPECT ALL BEARINGS OF CAR INDICATED AS WELL AS EACH ADJOINING CAR.



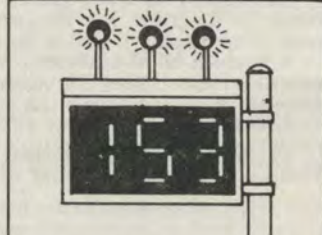
ONE HOT BOX EACH SIDE OF SAME AXLE COUNT (126) FROM REAR OF TRAIN. INSPECT ALL BEARINGS OF CAR INDICATED AS WELL AS EACH ADJOINING CAR.



TWO OR MORE HOT BOXES ON RIGHT SIDE OF TRAIN IN DIRECTION OF MOVEMENT. AXLE COUNT (118) FROM REAR OF TRAIN. INSPECT ALL JOURNALS, REAR OF TRAIN TO AND INCLUDING CAR AHEAD OF AXLE COUNT ON DISPLAY.



TWO OR MORE HOT BOXES ON LEFT SIDE OF TRAIN IN DIRECTION OF MOVEMENT. AXLE COUNT (095) FROM REAR OF TRAIN. INSPECT ALL JOURNALS, REAR OF TRAIN TO AND INCLUDING CAR AHEAD OF AXLE COUNT ON DISPLAY.



ONE OR MORE HOT BOXES ON EACH SIDE OF TRAIN. AXLE COUNT (153) FROM REAR OF TRAIN. INSPECT ALL JOURNALS ON BOTH SIDES, REAR OF TRAIN TO AND INCLUDING CAR AHEAD OF AXLE COUNT ON DISPLAY.

LEGEND

UNILLUMINATED

FLASHING

INDICATOR LAMP



As the train passes the detector, the right or left hot box indicator light on top of the board starts to flash immediately upon detection of a hot journal, indicating the side of the train having the overheated journal.

A flashing indicator light in the center indicates that another hot bearing (or bearings) was detected subsequent to the hot bearing which is numerically indicated on the display board.

When any indicator light displays flashing white aspect, train must be stopped promptly and inspection made to locate car with hot bearing.

Lights and illuminated numerals will automatically cancel out 90 seconds after entire train passes detector.

When hot bearing is not located then all journals of car indicated by detector as well as five cars on either side of the car involved must be inspected.

When it is known hot bearing has been detected by crew member observing the flashing white light displayed on track side of instrument house, and a numerical readout is not displayed on the display board, then train must be stopped promptly and all bearings of train must be inspected.

TYPE D. REMOTE READOUT BY RECORDER AT TERMINAL.



Instrument House

Readout is by recorder located at nearby terminal as shown under Rule 827 on each subdivision.

When white light is flashing on instrument house, train must be stopped promptly and when means of communication is available, crew member must contact personnel at location of recorder to determine location of hot bearing. If location of hot bearing cannot be determined by personnel at recorder, inspection must be made of all bearings.

Terminal personnel at recorder will advise train crew of location of overheated journal, location will be given as number of cars from caboose and location of journals from trailing end of car right or left: 1, 2, 3, 4 such as "R-3."

If lead truck of lead locomotive does not appear on tape, train crew is to be advised to carefully hand feel this truck.

If location of journal is furnished by personnel at recorder, but defect cannot be found, inspect all bearings of indicated car as well as all bearings of five cars on either side.

CHECKING FOR JOURNALS SUSPECTED OF OVERHEATING

Whenever an overheated journal is suspected due to hot box detector activation, rolling inspection or visual symptoms, a walking inspection must be made to find the exact car and journal and to observe for other physical defects on the train.

For roller bearing cars special attention must be given to proper use of tempilstiks, loose or missing cap screws, temperature sensitive cap screws and loose or leaking seals.

For plain bearing cars, look for low oil; brass, pad or wedge defective or out of place, or water in journal box.

REPORTING OF HOT BOXES

When hot box detectors are actuated the following information is to be reported at next terminal in telegraph message form identified by symbol H.B. addressed jointly to Superintendent, Division Engineer, Signal Supervisor, and Chief Train Dispatcher, also General Manager Amtrak, San Francisco when an Amtrak passenger train is involved.

1. Date and time stopped and M.P. location.
2. Train identification.

3. Car number and location in train (whether or not defect found).
4. Box location (1, 2, 3 or 4 from hand brake end of car, right or left side facing hand brake).
5. Disposition of car: If set out, state where. If inspection shows that it was not necessary to set out even though bearing was warm enough to activate the detector, advise what corrective action was taken to permit movement of car. If roller bearing equipped, so state.

NOTE: Report all cases where train passes over the detector without an indication having been displayed, but develops a hot bearing between detector and a point 20 miles beyond detector.

Whenever a roller bearing car experiences two successive hot box detector actuations and overheated journal or other cause of actuation cannot be found after required inspections were made and five cars checked either side, car may be continued in train with provision that conductor must report same at next terminal and inspection is made by qualified maintenance personnel.

Train dispatcher to notify terminal of mandatory inspection when brought to his attention.

If a roller bearing car experiences three successive hot box detector actuations, it must be set out.

Train dispatcher must:

1. Notify Car Department of cars set out.
2. Notify Car Department of cars which are known to have had two successive hot box detector actuations.
3. Submit CS-7159A "Preliminary Report of Overheated Journals" whenever hot box is experienced except if on actuation of type "D" yard approach hot box detector.

Connecting crews, if any, must be notified by incoming crew of failure to locate hot bearing if indication is received on any hot box detector system and car is not set out.

CONTINUOUS WELDED RAIL (CWR) TRAINS

Continuous welded rail trains consist of a tiedown car and a number of roller-rack cars and may contain other cars, such as threader cars and elevator cars to accompany movement. A steel-end box car, refrigerator car, or high-side gondola car must be positioned on each end of CWR train as a buffer car during all movements except preparatory to and during unloading.

In addition to other requirements of this rule, when a CWR train is stopped for any reason, inspection must immediately be made of as much of train as practicable and the following items checked if train is carrying a full or partial load:

- a. Check for undesired movement of rail. The tops of rails are painted adjacent to the tiedown rack on the tiedown car which is located near center of train. Paint marks on each tier of rail must be in line; otherwise, this is an indication of an undesired movement of rail.
- b. Check each rail end to make certain it overhangs the last supporting roller by at least 12 feet and is no closer than 12 feet from the next empty roller. Rails are marked 12 feet from each end.
- c. When a load contains continuous lengths of rail made up of more than one piece, check to see that rail joints are secured with at least four bolts, properly tightened, and that rail ends have not pulled apart.
- d. Check coupler operating levers to make certain they are in position to prevent uncoupling and that coupler operating lever locking devices are in position and locked.

When any of these conditions are not as required, train must not be moved until train dispatcher has been contacted and further instructions are received.

RULE 827-A. FLAMMABLE COMPRESSED GAS.

Following are shipping names of Flammable Compressed Gas:

Standard Transportation Classification Code	Shipping Name
4905705 . . .	Butadiene, inhibited (butadiene from alcohol)
4905704 . . .	Butadiene, inhibited (butadiene from petroleum)
4905703 . . .	Butadiene, inhibited (butadiene, impure, for further refining)
4905706 . . .	Butane
4905706 . . .	Liquefied petroleum gas (butane)
4905702 . . .	Butane (butane, impure, for further refining)
4905702 . . .	Liquefied petroleum gas (butane, impure, for further refining)
4905727 . . .	Compressed gases, n.o.s. (dispersant gases, nec. flammable)
4905748 . . .	Compressed gases, n.o.s. (iso-butene)
4905775 . . .	Compressed gases, n.o.s. (refrigerants, nec. liquid, flammable)
4905713 . . .	Cyclopropane
4905716 . . .	Difluorethane
4905719 . . .	Difluoromonochloroethane
4905510 . . .	Dimethylamine, anhydrous
4905725 . . .	Dimethyl ether
4905734 . . .	Ethylene
4905749 . . .	Hydrocarbon gas, liquefied
4905749 . . .	Liquefied hydrocarbon gas
4905746 . . .	Hydrogen
4905745 . . .	Hydrogen, liquefied
4905410 . . .	Hydrogen sulfide
4905747 . . .	Isobutane
4905747 . . .	Liquefied petroleum gas (isobutane)
4905750 . . .	Isobutane (isobutane for further refinery processing)
4905750 . . .	Liquefied petroleum gas (isobutane for further refinery processing)
4905752 . . .	Liquefied petroleum gas
4905707 . . .	Liquefied petroleum gas (butene gas, liquefied)
4905711 . . .	Liquefied petroleum gas (butylene, impure for further refining)
4905780 . . .	Liquefied petroleum gas (pintsch gas)
4905758 . . .	Methylacetylene—propadiene, stabilized
4905761 . . .	Methyl chloride
4905764 . . .	Methyl chloride—methylene chloride mixture
4905520 . . .	Methyl mercaptan
4905530 . . .	Monomethylamine, anhydrous
4905781 . . .	Propane
4905781 . . .	Liquefied petroleum gas (propane)
4905785 . . .	Trifluorochloroethylene
4905540 . . .	Trimethylamine, anhydrous
4905792 . . .	Vinyl chloride
4905795 . . .	Vinyl methyl ether, inhibited

When necessary to provide helper engine for trains handling tank cars containing Flammable Compressed Gas, helper engine must be placed in accordance with helper service instructions and there must be a proper separation of the helper engine from tank cars containing Flammable Compressed Gas.

Unless specifically authorized by Superintendent, trains or cuts of cars containing Flammable Compressed Gas must not exceed 8,000 feet.

RULE 829. In addition to other train inspection requirements, when a train stops to be met or passed by a continuous welded rail train, the CWR train must also be inspected to determine rails are in position in the roller racks, that ends of continuous rail are not closer than 12 feet from the next empty roller and that they overhang the last supporting roller by at least 12 feet, and to see that cars are properly coupled with locking devices in place.

RULE 834. Loaded multi-level cars in other than solid trains must be entrained at least four cars behind working locomotives in road movement; also loaded multi-level cars must not be entrained next to hopper, gondola or tank cars loaded with stone, gravel, sand, lime, coal, soda ash, chemicals, etc., subject to wind, vapor, or fume action on adjacent cars, nor placed next to empty cars previously loaded with such commodities. Loaded multi-level cars must not be entrained next to open-top loads of lumber, poles, steel, etc., when lading extends beyond top of car.

SPECIAL INSTRUCTIONS—ALL SUBDIVISIONS

Open-top cars with lading height exceeding 15 feet six inches, except cars transporting highway trucks or trailers, multi-level freight cars either loaded or unloaded, and automobile underframe cars, shall be entrained at least five cars distance from engine or caboose if length of train permits on train operating in or through the States of California, Nevada and Arizona.

Additionally, in California, wood chip cars transporting wood chips when loaded and covered in such a manner so as to preclude any material from being dislodged enroute, are exempted from restrictions above.

RULE 874. Forward brakeman on freight trains will ride the lead unit when a seat is available.

AIR BRAKE RULES

RULE 3. A full independent brake application on road locomotive classes EP 636, GF 628, GF 630, GF 633, EF 623, EF 630, EF 636, EF 642 results in a brake cylinder pressure of 72 lbs. This brake cylinder pressure must be maintained to provide required braking power at very low speed or when stopped. Under no circumstances must self-lapping portion of independent brake valve be changed except to obtain brake cylinder pressure of 72 lbs. from a full independent brake application.

RULE 9. The following series of cars are equipped with ABEL brake system which has automatic change-over feature to provide proper brake function when car is loaded and when empty:

SSW 75700-75799	Gondolas
SSW 78500-78599	Hoppers (open top)
SP 333500-334399	Gondolas
SP 337500-337599	Gondolas
SP 345000-345669	Gondolas
SP 354000-354749	Gondolas
SP 463500-464899	Hoppers (open top)
SP 467500-467549	Hoppers (open top)
SP 480000-480193	Hoppers (open top)
SP 491000-491059	Hoppers (covered)
SP 492000-492039	Hoppers (covered)
SP 500604	Flat car
SP 590000-590099	Flat cars

The following series of cars are equipped with ABDEL brake system, which has automatic change-over feature to provide proper brake function when car is loaded and when empty. This feature is fully automatic on these series and requires no action on part of engineer:

SP 337600-337699	Gondolas
SP 354750-355299	Gondolas
SP 463337-463486	Hoppers (Open Top)
SP 464000-465699	Hoppers (Open Top)
SP 590100-590131	Flat Cars (Anode)
SP 595500-595624	Cradle Flats
KCC 1401-1524	Hoppers (open top)

RULE 17. When dynamic brakes are not used on helper engine(s), tonnage of such engine(s) must be added to that of train in determining the number of retaining valves required.

RULE 21. Coupling caboose and road engine to train will be considered as an indication that train is made up and switchmen have completed their work. Switchmen must not perform switching on or couple other cars to a train on which the road engine and caboose have been attached without instructions from the yardmaster, who will see that members of the crew are notified in advance.

RULE 27. First paragraph is revised to read:

Refer to Rule 102 of the Rules and Regulations of the Transportation Department regarding procedures when a train or engine with a cut of cars, in motion, on main track or siding has an emergency application of air brakes.

RULE 33. Trains WCESP, YUESP and PXESP containing not less than 90 percent mechanical refrigerator cars or any restricted cars, not exceeding 120 cars and/or 90 tons per operative brake may be authorized by train order to operate at Column 1 speeds not exceeding 65 MPH unless otherwise restricted.

When tonnage exceeds 80 tons per operative brake, the following trains: BSMFF, GSLAF, APLAA, LAEST, and LAHOT, when consisting of not more than 50% multi-level equipment may be authorized, by train order, to operate at maximum speed otherwise allowed but not exceeding speed shown in following table:

TONS PER OPERATIVE BRAKE		
Number of Cars:	Between 80 & 85 tons	Between 85 & 90 tons
1-50	70 MPH	65 MPH
51-60	65 MPH	65 MPH
61-65	65 MPH	55 MPH
65-70	60 MPH	
71-80	50 MPH	

In all other cases not covered in the above table Air Brake Rule 33 will apply.

MISCELLANEOUS

1. HELPER SERVICE

The following covers engine tractive effort in pounds:

Engine Model	Classification	Starting Tractive Effort
C 415	AS415	62,750
RS 11	AS418-1 to 6	65,000
RS 32	AS420	63,750
C 630	AS600-1	102,000
RSD 15	AS624-1	92,500
C 628	AS628-2	97,750
C 630	AS630-1	101,000
GP 9	EF418-1 to 9; EF418C-1-2; EF418E-1-2-3	64,200
GP 20	EF420-1-2; EF420C-1-2	65,100
GP 30	EF423-1; EF423C-1	66,100
GP 35	EF425-1 to 4; EF425C-1-2-3	66,000
GP 40	EF430C-1	67,560
SD 9	EF618-1 to 5; EF618E-1-2	89,700
SD 39	EF623-1-2	104,150
SD 35	EF625-1	95,540
SD 40	EF630-1-2	102,750
SD 40-2	EF630-3-4	102,100
SD 45	EF636-1 to 6; EF636C-1 to 5	103,470
SD 45-2	EF636-7 to 10-12-15; EF636C-6 to 9	102,600
SD 45X	EF642-1-2	103,240
DD 35	EF850B-1	131,750
GP 40P-2	EP430-1	70,200
SDP 45	EP636-1	102,500
SW 1200	ES412	62,250
SW 1500	ES415-1 to 6	65,000
MP 15	ES415-7	65,400
SD 7	ES615-1 to 4	82,500
SD 38	ES620-1	104,000
U 25 B	GF425-1-2-3	67,800
U 28 B	GF428-1	67,890
U 28 C	GF628-1	103,120
U 30 C	GF630-1-2	104,850
U 33 C	GF633-1 to 10	104,710
U 50	GF850	139,250

NOTE: For classification of engines, see Item 3.

A. Rule for entraining one helper engine:

- (1) On trains of less than 100 cars, helper engine consisting of not more than two six-axle operating units totaling 179,400 pounds tractive effort nor more than two four-axle operating units totaling 135,600 pounds tractive effort or a combination of one four-axle and one six-axle operating unit totaling 157,600 pounds tractive effort may be placed behind caboose.
- (2) On trains of 100 or more cars helper engine consisting of only one unit may be placed behind caboose.
- (3) Helper engine that does not qualify under (1) or (2) must be entrained as near as practicable to shove 1/3 and pull 2/3 of tonnage handled by helper engine.

B. Rule for entraining more than one helper engine:

- (1) Trains having more than one helper engine must have each engine entrained as near as practicable so that it will shove 1/3 and pull 2/3 of tonnage handled.
- (2) Trains powered with two helper engines, one of which qualifies to be placed behind caboose, must entrain the swing helper as near as practicable to shove 1/3 and pull 2/3 of tonnage handled by the swing helper.

C. Air must be cut in on all helper engines and helper engine must not be coupled nor uncoupled while train is in motion.

D. Road engineer and helper engineer must communicate any change affecting the operation of their train when means of communication is available. When speed is being held above 8 MPH on ascending grade, helper engineer must regulate amperage during speed reductions or speed increases to maintain the amperage indicated before speed change; if speed of train drops below 8 MPH or when coming to a stop on ascending grade, helper engineer must regulate amperage during speed reduction to maintain the amperage indicated before speed change, then close throttle just before train stops.

E. When speed of trains powered with 12,000 or more horsepower on the head end and with helper engine drops below 16 MPH, road engineer must reduce throttle to Run 6. When train speed drops below 16 MPH, head end power being reduced to Run 6 may result in helper power working in short time rating. The short time rating must not be exceeded. If it appears that short time rating will be exceeded, assistance must be requested from train dispatcher. If assistance cannot be obtained, grade must be doubled.

F. Trailing tonnage must not exceed that amount of tonnage listed under column "Maximum Tonnage to be Handled by Road Engine With Helper Entrained" for territory over which helper will be used. Should the amount of tonnage computed exceed the maximum tonnage listed, it may be necessary to isolate road units or add helper power. If practical, isolate units behind the lead unit leaving operating units next to the train. Weight of those units isolated and separated from the train by operating units need not be added to train weight in computing location of helper.

If units have to be isolated next to the train, weight of these units must be added to the train when computing location of the helper.

If units are moved dead in consist, they should be placed next to the train and their weight added to the tonnage of the train.

UNLESS OTHERWISE RESTRICTED MAXIMUM TONNAGE TO BE HANDLED BY ROAD ENGINES WITH HELPERS ENTRAINED:

TERRITORY

Tucson-Lordsburg.....	6,500
Yuma-Tucson.....	8,500
Lordsburg-Mescal.....	7,500

UNLESS OTHERWISE RESTRICTED MAXIMUM TONNAGE TO BE HANDLED BEHIND HELPER ENGINES:

TERRITORY

Tucson-Lordsburg.....	5,525
Yuma-Tucson.....	7,225
Lordsburg-Mescal.....	6,375

G. In locating helper engine(s) in train, the following example of calculating tonnage for road engine and helper engine(s) will be used:

EXAMPLE:

Train: 42 loads, 87 empties = 5756 tons.
 Four-unit road engine (2-GF630, 1-EF623, 1-EF625).
 Three-unit helper engine (2-EF623, 1-EF630).

Total road horsepower	10800
Total helper horsepower	7600
Total horsepower	18400

(1) Divide total horsepower by tonnage =

$$\frac{18400}{5756} = 3.196 \text{ HP/T}$$

(2) Divide road horsepower by HP/T factor =

$$\frac{10800}{3.196} = 3379 \text{ tons}$$

 Road engine will handle 3379 tons

(3) Divide helper horsepower by HP/T factor =

$$\frac{7600}{3.196} = 2377 \text{ tons}$$

(4) To determine 1/3 of helper tonnage divide

$$\frac{2377}{3} = 792 \text{ tons}$$

 Helper engine will shove 792 tons.

(5) To determine 2/3 of helper tonnage multiply 792 x 2 = 1584 tons
 Helper engine will pull 1584 tons.

(6) Under no circumstances should the tonnage that will trail the helper engine exceed that amount indicated in the chart.

(7) Should tonnage trailing road or helper engine, as computed above, exceed the amount indicated in the chart it will be necessary to:

- (a) Reduce tonnage or
- (b) Relocate helper in compliance with instructions. (Item D under General) or,
- (c) Add additional helper(s) of sufficient horsepower to handle tonnage in excess of amounts indicated in chart. Additional helper(s) may be placed behind caboose if they meet requirements of item A 1., if not they are to be entrained as follows:

EXAMPLE:

Train: 170 loads, 2 empties = 13,980 tons
 Three-unit road (1-EF630, 1-EF636, 1-GF633)
 Four-unit swing helper (1-EF630, 2-EF636, 1-GF633)
 Two-unit rear helper (1-EF618, 1-EF630)

Total road horsepower	9900
Total swing helper horsepower	13500
Total rear helper horsepower	4800
Total horsepower	28200

SPECIAL INSTRUCTIONS—ALL SUBDIVISIONS

- (1) Divide total horsepower by tonnage = $\frac{28200}{13980} = 2.017 \text{ HP/T}$
- (2) Divide road horsepower by HP/T factor = $\frac{9900}{2.017} = 4908 \text{ tons}$
Road engine will handle 4908 tons
- (3) Divide swing helper horsepower by HP/T factor = $\frac{13500}{2.017} = 6693 \text{ tons}$
Swing helper will handle 6693 tons (total)
- (4) To determine 1/3 of swing helper tonnage = $\frac{6693}{3} = 2231 \text{ tons}$
Swing helper will shove 2231 tons
- (5) To determine 2/3 of swing helper tonnage = $2231 \times 2 = 4462 \text{ tons}$
Swing helper will pull 4462 tons
- (6) Divide rear helper horsepower by HP/T factor = $\frac{4800}{2.017} = 2380 \text{ tons}$
Rear helper will handle 2380 tons (total)
- (7) To determine 1/3 of rear helper tonnage = $\frac{2380}{3} = 793 \text{ tons}$
Rear helper will shove 793 tons.
- (8) To determine 2/3 of rear helper tonnage = $793 \times 2 = 1586 \text{ tons}$
Rear helper will pull 1586 tons.

GENERAL:

- A. At locations designated by the Superintendent, road power must not exceed 24 axles of operative power.
- B. Helper engine must not be placed on head end of train without authority being obtained from train dispatcher.
- C. AS415, AS420, ES412 and ES415 class, except ES415 class numbers 2680-2759 units must not be cut into train in helper service. ES415 class numbers 2400-2679 may be cut into train and used in helper service providing coupler stops are applied and locked on both ends of the engine. No more than two of these units may be placed behind the caboose.
- D. Should it become necessary to relocate the helper at other than the shove 1/3, pull 2/3 location in order to separate helper from restrictive cars or in compliance with maximum tonnage trailing helper limitations, the helper may be relocated, but under no circumstances in relocations may helper shove less than 30% nor more than 45% of the total tonnage to be handled by the helper.

2. PLACEMENT OF RESTRICTED CARS IN TRAIN WITH OR WITHOUT HELPER:

- (a) When average weight of cars in train, other than switchers and locals not exceeding 45 cars, LAEST, and LAHOT is more than 60 tons per car, do not entrain any cars with gross less than 50 tons within 5 cars of road engine.

The above will not apply to continuous welded rail (CWR) trains nor to GSLAF between Tucumcari and Yuma when total tonnage does not exceed 5000 tons or to the Hayden Local between Magma and Tucson.

The first five cars in the Hayden Local, Westward Hayden to Magma, must each have a gross weight of not less than 85 tons.

- (b) Following series of USAX or DODX cars are restricted to movement on rear of train and behind any helper engines:
38016 thru 38666 and
39095 thru 39199
- (c) Cars measuring less than 35 feet over coupler pulling faces must not be handled in train coupled to cars longer than 60 feet over coupler pulling faces.

In addition, empty tank cars under 35 feet outside length will be entrained within 20 rear cars of train.

Either the Train Mass Profile (graph), conductor's train list and/or switch list furnished crew members will identify a car measuring less than 35 feet over coupler pulling faces with letter "S," tank cars with the letters "TS." Cars measuring over 60 feet between coupler pulling faces will be identified by the letter "L."

3. CLASSIFICATIONS ARE DESCRIPTIVE OF ENGINES AS FOLLOWS:

E F 4 15 A C 01

Denotes Order of Purchase for Units of same Classification.

Denotes Ownership if other than SPT Co.:
C = SSW Ownership.
E = SP Equipment Co. owned, leased to SPT Co.
S = SP Equipment Co. owned, leased to SSW Ry.

Denotes Car Body Type with Control Cab;
B = Booster; No Letter = Road Switcher Type.

Denotes Horsepower in Hundreds: 00 = Not Powered; 18 = 1750-1800 HP, etc.

Denotes Number of Axles.

Denotes Service Assignment: F = Freight; M = Misc.; P = Passenger; S = Switcher.

Denotes Builder: A = Alco; E = EMD; G = GE; S = SPT.

4. SPEED RESTRICTIONS FOR ENGINES: Maximum speed shown below is subject to further restriction applicable to certain territories as shown in Speed Restrictions for Trains:

MAXIMUM SPEED AND LENGTH OF ENGINES (Between pulling face of couplers)

CLASSIFICATION	ENGINE NUMBERS	MAXIMUM SPEED EXCEPT #	LENGTH (FEET)
AS600	1000-1002	70	70
ES406	1004	45	44
ES408	1100-1128	65	44
ES408B	1150-1153	65	44
ES409	1190-1199	65	44
AS409	1200-1281	60	45
ES410	1300-1337	65	44
ES615	1400-1442	70	61
AS410	1820, 1842	60	45
ES412	2250-2316	65	44
AS415	2400-2409	65	54
ES415	2450-2689	65	45
ES415	2690-2759	65	48

SPECIAL INSTRUCTIONS—ALL SUBDIVISIONS

CLASSIFICATION	ENGINE NUMBERS	MAXIMUM SPEED EXCEPT #	LENGTH (FEET)	CLASSIFICATION	ENGINE NUMBERS	MAXIMUM SPEED EXCEPT #	LENGTH (FEET)
AS418	2900-2903; 2905-2936	70	57	EF430	1977	70	59
AS618	2951-2970	70	58	EF423	3000-3046	70	56
ES620	2971-2976	50	69	GF630	3300-3312	70	67
EP418	3001-3002; 3004-3010	70	56	EF425	3500-3584	70	56
AS624	3100-3102	25*	67	EF430	3684-3799	70	59
AS628	3110-3136	25*	69	EF420	3800-3899	70	59
AS630	3140-3153	25*	69	EF423	3900-3919	70	59
EP418	3186-3196	70	56	EF430	4000-4261	70	59
EP430	3197-3199	70	63	EF420	4800-4829	70	59
EP636	3200-3209	70	71	EF418	5901-6260	70	56
EF418	3300-3869	70	56	EF418	6425-6683	70	56
EF618	3870	70	61	EF423	6900-6976	70	56
EF418	3871-3872	70	56	EF618	7300-7318	70	61
EF618	3873-3875	70	61	EF625	7400-7440	70	61
EF418	3877-3879	70	56	EF630	7445-7496	70	66
EF618	3880-3964	70	61	EF630	7500-7536	70	66
AS420	4000-4009	70	57	EF630	7550-7594	70	66
EF420	4030-4153; 4500-4553; 4560-4576	70	56	EF630	7597-7599	70	66
EF618	4300-4451	70	61	EF630	7600-7619	50	71
EF620	4700-4724	70	61	GF425	8100-8137	70	60
EF423	5000-5037	70	56	GF430	8200-8234	70	60
GS407	5100-5109	55	37	CR ENGINES:			
EF623	5300-5325	70	66	EF420	2100-2112	70	56
EF425	6300-6303	70	56	EF423	2168-2249	70	56
EF425	6500-6681	70	56	EF425	2250-2399	70	56
GF425	6700-6767; 6800-6865	70	60	GF425	2500-2685	70	60
EF625	6900-6953	70	61	GF423	2700-2788	70	60
GF428	7025-7028	70	60	GF428	2822-2823	70	60
GF628	7150-7159	70	67	GF430	2830-2889	70	60
EF430	7600-7607	70	59	GF433	2890-2970	70	60
GF630	7900-7936	70	67	EF430	3000-3279	70	59
EF630	8300-8306; 8350-8356	50	71	EF425	3620-3692	70	56
EF630	8400-8488	70	66	EF625	6000-6051	70	61
GF633	8585-8796	70	67	EF636	6066-6239	70	66
EF636	8800-9156	70	66	EF630	6240-6357	70	66
EF636	9157-9404	50	71	GF625	6500-6519	70	65
EF642	9500-9505	50	71	GF628	6520-6534	70	67
EF850B	9900-9902	70	88	GF630	6535-6539	70	67
GF850	9950-9952	70	84	GF633	6540-6578	70	67
AMTRAK ENGINES:				GF630	6579-6583	70	67
EP415A	Model F7, 110-123; 376-377	79	51	GF636	6587-6599	70	67
EP430A	Model F40PH, 200-229	70	56	EF636	6654-6666	50	71
EP630A	Model SDP40F, 500-649	70	72	GF623	6700-6718	70	67
GP630A	Model P30CH, 700-724	70	72	EF618	6900-6924	70	61
BN ENGINES:				EF620	6925-6959	70	66
EF418	1700-1980	70	56	EF418	7000-7483	70	56
EF418	1990-1998	70	56	EF418	7496-7559	70	56
EF420	2001-2071	70	56	EF420	7656-8162	70	59
EF420	2072-2109	70	59	L&N ENGINES:			
EF423	2200-2251	70	56	EF418	501-545	70	56
EF425	2500-2545	70	56	EF418	900-904	70	56
EF430	3000-3039	70	59	AF418	910-914	70	60
AF424	4240-4246	70	59	AF418	950-959	70	57
AF425	4252-4264	70	59	EF423	1000-1060	70	56
AF636	4360-4369	70	70	EF425	1100-1128	70	56
GF620	5200-5208	70	67	EF625	1200-1220	70	61
GF630	5300-5394	70	67	EF630	1225-1258	70	66
GF425	5400-5429	70	56	EF630	1259-1278	50	71
GF428	5450-5465	70	60	GF630	1470-1499	70	67
GF430	5470-5484	70	60	GF625	1500-1525	70	60
GF625	5600-5641	70	65	GF628	1527-1533	70	65
GF628	5650-5677	70	67	GF630	1534-1582	70	67
GF633	5700-5765	70	67	GF425	1600-1626	70	60
GF630	5800-5839	70	67	GF428	2500-2504	70	60
GF630	5900-5944	70	67	GF430	2505-2509	70	60
EF618	6100-6206	70	61	GF423	2701-2772	70	60
EF624	6240-6255	70	61	GF423	2800-2824	70	60
EF630	6300-6334	70	66	EF430	3000-3029	70	59
EF630	6376-6385	50	71	EF630	3554-3583	50	71
EP630	6394-6399	70	66	EF420	4000-4099	70	59
EF636	6400-6567	70	66	NW ENGINES:			
EF636	6592-6599	70	71	EF425	200-239	70	56
EF630	6700-6752	50	71	EF418	500-521	70	56
EF630	6800-6836	50	71	EF423	522-565	70	56
EF630	6900-6928	50	71	EF418	620-962	70	56
B&O/C&O ENGINES:				EF425	1300-1328	70	56
EF430	GM-50	70	59	EF430	1329-1388	70	59
EF618	1831-1840	70	61	EF625	1500-1579	70	61

CLASSIFICATION	ENGINE NUMBERS	MAXIMUM SPEED EXCEPT#	LENGTH (FEET)
EF630	1580-1624	70	66
EF630	1625-1652	50	71
EF636	1700-1814	70	66
GF428	1900-1929	70	60
GF430	1930-1964	70	60
EF418	2448-2534	70	56
EF418	2700-2709	70	56
EF418	2800-2814	70	56
EF423	2900-2909	70	56
EF425	2910-2918	70	56
EF418	3484-3495	70	56
EF420	4100-4159	70	59
EF630	6073-6138	50	71
GF630	8000-8002	70	67
GF430	8465-8539	70	60
RI ENGINES:			
GF433	190-199	70	60
GF425	200-238	70	60
GF428	240-281	70	60
GF433	285-299	70	60
EF425	300-333	70	56
EF430	340-396	70	59
EF418	1312-1353	70	56
EF420	4300-4355	70	56
EF418	4550-4559	70	56
GF630	4582-4589	70	67
EF430	4700-4719	70	59
EF630	4790-4799	50	71
UP ENGINES:			
GF628	2800-2809	70	65
GF630	2810-2919	70	67
EF630	3000-3122	70	66
EF630	3123-3304	50	71
EF636	3600-3649	70	66
EF630	8000-8064	50	71

Engines handled dead must not exceed speed shown in table.

♦When operated in multiple unit control, on head end of train or running light and engineer is in other than the leading control cab in direction of movement, speed must not exceed 30 MPH. 'A' type units (indicated by letter 'A' following classification numerals) operating in reverse as lead unit in direction of movement must not exceed 30 MPH.

*May be handled isolated in multiple, dead in multiple, or dead in train at maximum speed of 70 MPH.

Any locomotive not listed in these tables is not to be operated in trains unless authorized by train order indicating maximum permissible speed for locomotive which is then subject to any further restrictions imposed by the timetable or otherwise.

5. MOVEMENT OF LOCOMOTIVES

RULES GOVERNING MOVEMENT OF ENGINES NOT EQUIPPED WITH ALIGNMENT CONTROL COUPLERS

- AS415, AS420, ES415, and following ES412 (2266, 2271, 2272, 2275, 2276, 2279, 2282, 2283, 2284, 2285, 2286, 2287, 2288) class engines must if practicable, be MU'd in accordance with rules. These engines are equipped with dynamic brake wire.
- When necessary to entrain the following class engines:

ES406	ES409	ES410	ES412E
AS407	AS409	ES412	ES415*
ES408	ES410E	FS412	AS415
ES408B	AS410	GS407	AS420

Placement in train will be as follows:

- Foreign line engines not equipped with alignment control are to be considered in above listings.
- Engines moved dead in train must be prepared for such movement.

- These engines may be moved on the head end of train, provided train does not exceed 800 tons.
 - On trains of more than 800 tons, these engines must be moved not less than 5 cars nor more than 10 cars ahead of rear of train and behind any helper engine.
 - Not more than two of these engines may be moved in a train and when two are moved they must be separated by a car no longer than 50 feet.
- When only AS415, AS420, ES412 and ES415* units are used in engine consist, not more than two units may be on the line when making a reverse movement with cars or train and on line units must be located adjacent to the train.
 - One AS415, AS420, ES412 and ES415* unit may be MU'd on the head end of one road unit.
 - When a train being handled by a single unit road engine where no dynamic braking is required or reverse movements will be made, a single AS415, AS420, ES412 and ES415* unit may be placed next to the train.
 - When operating with mixed engine consist, where dynamic braking is required, not more than two AS415, AS420, ES415* and following ES412 units will be used:

2266	2279	2286
2271	2282	2287
2272	2283	2288
2275	2284	
2276	2285	
 - If one unit is used it will be placed as second unit in engine consist.
 - If two units are used, they will be placed as second unit and third units in engine consist.
 - A road unit must be coupled against the train.
 - If necessary to make a reverse move with cars or train, lead unit must be isolated.
 - If necessary to operate with more than two AS415, AS420, ES412 and ES415* class units in consist (including pick up of units from outlying points), these units must be placed in the lead. If reverse move is made with cars or train, all units ahead of the two rear units in these classes will be isolated.
 - Extreme caution must be used during dynamic braking or when making reverse moves to prevent jackknifing and track damage.

ENGINES EQUIPPED WITH ALIGNMENT CONTROL COUPLERS

* Class ES415, Nos. 2680-2759 are equipped with alignment control couplers in buff and may be MU'd in Engine consist without regard to location. These engines may be moved dead on the head end of train.

- Engines equipped with multiple unit controls (MU) and alignment control couplers, weighing 150,000 pounds or more, may be handled on head end of train; if weighing less than 150,000 pounds, must be placed near rear of train in accordance with Item 2.

INSTRUCTIONS FOR USE OF HINGED COUPLER STOPS

For use in switching service the coupler stops must be opened (swung back) against end of engine and locking pin secured in bracket provided.

For use in road service, MU service, or dead in train, the coupler stops must be closed (swung in) into coupler opening against coupler pocket side with locking pin secured behind coupler carrier on both ends of engine.

Locking pins must be in place (whether coupler stop is swung back or swung in) to insure securement of the coupler stop.

With the coupler stops in place, these engines may be MU'd in engine consist without regard to location, or may be moved dead on head of train.

Class ES415, Nos. 2450-2679 are equipped with hinged coupler stops.

PREPARATION OF AIR EQUIPMENT FOR MOVEMENT DEAD IN TRAIN

ALL UNITS: Reduce main reservoir pressure to 25 lbs. above zero.

Cut in dead engine feature.

Remove automatic brake valve handle in running position or with 26-L equipment, remove in handle off position.

If brake valve handles cannot be removed, they must be blocked in running position.

IN ADDITION:

24 RL equipment:

Close brake pipe cut out cock and place the dual ported cut out cock in cut-in position.

Open the end cocks on actuating pipe and independent application and release pipe.

6 SL or 14 EL Equipment.

Close the brake pipe cut out cock, or place the rotair valve or 3 position brake pipe cut out cock in dead position.

26 L Equipment.

Place the brake pipe cut off valve in cut-out position.

Place the dual ported cut out cock in open or cut in position, or place the MU 2a valve in lead or dead position.

Open the end cocks on actuating pipe and brake cylinder equalizing pipe.

6. Dead or disabled engines, and equipment listed in timetable which requires movement at reduced speed must first be reported as ready to move to the Chief Train Dispatcher, who will designate the train in which the engine or equipment is to be moved. Any such engine must not be handled in train until train order designating maximum speed is issued.

7. Engines operated with engineer in other than lead unit in direction of movement, must not exceed 20 MPH when approaching highway or street crossing at grade, subject to further restrictions imposed by local conditions.

8. When a unit or units in locomotive consist emit excessive smoke through exhaust stacks other than from a cold start, prompt report must be made to train dispatcher who will arrange to notify roundhouse foreman or locomotive maintenance forces on duty at first maintenance facility where train is scheduled to stop. Unit number, time and location where excessive smoking of unit was first observed must be reported.

When a yard engine is observed emitting excessive smoke, report must be made to roundhouse foreman or locomotive maintenance forces on duty.

In addition, engineer must make appropriate entry on work report, Form CS 2326.

9. Not more than 10 diesel units in operation may be used on head end of any freight train.

10. Unless otherwise authorized, trains handling passenger cars with flat spots on wheels in excess of $3\frac{1}{4}$ inches in length must not exceed 10 MPH. When flat spots are not in excess of $3\frac{1}{4}$ inches long such cars may be operated at maximum authorized speeds.

11. Gross weight of SPMW 6400-6439 100-ton air dump cars cannot exceed the gross weight shown in Timetable or Line Clearance Circular for each branch line. Also, cars must not be dumped on curves of 25 degrees or more, or operated through curves of 35 degrees or more.

12. Except when handling cabooses on or near the head end in local or road switcher service when handling only a few cars, cabooses are not to be moved other than at rear of train, unless specifically authorized.

13. When setting out bad order cars enroute, head portion of train, together with bad order car, must be taken to the nearest set out point in direction of movement, bad order car set out, engine detached and head portion of train left at set out point, when practicable. Rear portion of train is then to be brought to set out point and head and rear portions of train coupled together.

14. LOAD LIMIT

Where 315,000 pound load limit applies:

Gross weight of 315,000 pounds applies to uniformly loaded four-axle cars with minimum axle spacing of 6'-0" and minimum distance of 37'-0" center to center trucks; also wheels 38" or more in diameter.

Where 263,000 pound load limit applies:

Gross weight of 263,000 pounds or less applies to uniformly loaded four-axle cars having trucks spaced 23'-0" or more center to center and minimum axle spacing of 5'-6".

15. Units SSW 9052 through 9068 and 9090 through 9110 will have overspeed cut-out cocks blocked open and no attempt should be made to close them. In event overspeed device (or speedometer) malfunctions enroute, unit should be rearranged in the locomotive consist as a train-line unit to clear the condition.

16. Flat cars loaded with copper anodes must not be handled in trains unless cars are equipped with side cleats.

SPECIAL INSTRUCTIONS—ALL SUBDIVISION

17. MAXIMUM SPEED PERMITTED WITH CERTAIN EQUIPMENT	MPH MAIN TRACKS OTHER THAN BRANCHES	MPH MAIN TRACKS ON BRANCHES
Double or multiple.....		25
Scale test cars, except.....	40**	30
SP 2024, WO 3, SP 2025.....	65	49
K&J pedestal or center hinged air-dump cars, loaded or empty (except SPMW-5100 to 5289).....	35*	25*
Relief outfits with steam derrick.....	45	25*
Relief outfit SPMW 7140 must not be operated east of MP 972.37 on Hayden Branch, nor east of MP 1088.9 on Douglas Branch.		
Locomotive Crane/Pile Drivers		
SPMW 6603 & 6604:		
With boom in place, either end forward ^①	25*	15*
With boom disconnected, heavy end forward.....	45	25
boom end forward.....	20*	15*
With boom disconnected and removable counterweight properly positioned, either end forward.....	55	25
SPMW 4028, 4029, SSW 96405:		
With boom in place, either end forward ^①	25*	15*
With boom disconnected, heavy end forward.....	40	25
boom end forward.....	20*	15*
With boom disconnected and removable counterweight properly positioned, either end forward.....	40	25
SPMW 4027 SPMW 5870		
4038 5874		
4091 5899		
5437 6601		
5479 6602		
5595 SSW 96404		
5852 NWPMW 31		
With boom in place, either end forward ^①	25*	15*
With boom disconnected, heavy end forward.....	45	25
boom end forward.....	20*	15*
Steam pile driver SPMW 4053.....	35	25*
Jordan Spreaders:		
Running backward.....	25	20
Moving forward (prepared for travel).....	35	35

*These speeds must not be exceeded, and on curves where authorized speed is more than 15 MPH speed must be reduced to 5 MPH less than shown in timetable and on speed signs.

**Scale Test Car NBS-1 to be handled on trains not more than 20 cars ahead of caboose and speed of train handling NBS-1 not to exceed 60 MPH.

①When moving in train with boom in place, operator must be on board.

Unless specifically authorized, all relief outfit cranes and the following locomotive cranes and pile drivers: SPMW 4027, 4028, 4029, 4088, 5479, 5595, 5852, 5870, 5874, 5899, 6601, 6603, 6604, SSW 96404 and SSW 96405 must not operate over lines having maximum load limits of less than 263,000 lbs. and must observe all restrictions applying to cars weighing over 210,000 lbs.

18. OTHER MAXIMUM SPEEDS	MPH PASSENGER TRAINS	MPH FREIGHT AND MIXED TRAINS
Trains of deadhead Passenger equipment with caboose.....	65	
Passenger trains with caboose.....	65	
Engine, flanger and caboose only, except:		40
On curves.....		30
Trains handling pipe loaded on 89 ft. cars.		55
SP 517308 and SP 517361, SSW 80417 and SSW 80418.....		50
PC 598500 to 598999 (Gondolas).....		55
Empty bulkhead flat cars (FB) except series SP 590000-590111, SP 591100-591124 and SSW 88050-88099 equipped with roller bearings.....		55

NOTE: Light engines, or engine with caboose only, are authorized to operate at Column 1 speeds not exceeding 55 MPH, except on descending grade without dynamic brake in operation must not exceed Column 2 speeds.

When moving against current of traffic, or when movement is not protected by block signals, speed of passenger trains and light engines must not exceed 59 MPH, and speed of freight trains must not exceed 49 MPH, nor may speed exceed that applying to normal operation.

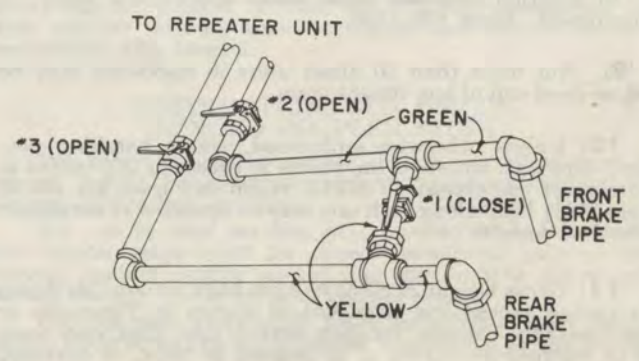
19. REPEATER AIR CARS (RAC) SP-260 Thru 266

The repeater air car is utilized to increase efficiency of train air brakes on long trains and during cold weather. The purpose of repeater relay equipment is to accept pneumatic signals from the brake pipe of forward portion of a train, and by relay action, produce a corresponding response in the brake pipe of the rear section of the train.

The repeater relay car has the ability to produce faster train charging time, reduce or eliminate brake pipe pressure gradient, more uniform braking forces, and faster brake application and release times.

A. PROCEDURE FOR ADDING REPEATER AIR CAR TO A TRAIN TO USE REPEATER CAR AIR EQUIPMENT.

1. Place as near to center of train as makeup will permit.
2. The RAC car is operational in either direction. The front brake pipe must be coupled to the portion of the train to which the road engine is attached. The rear brake pipe must be coupled to the other end of the train.
The angle cock on the unused brake pipe on each end of the car must be closed.
3. Where repeater air car is positioned in train and front and rear brake pipes have been properly connected and opened, then close the brake pipe bypass cock No. 1 and open the two repeater relay cutout cocks Nos. 2 and 3, all located inside of car.

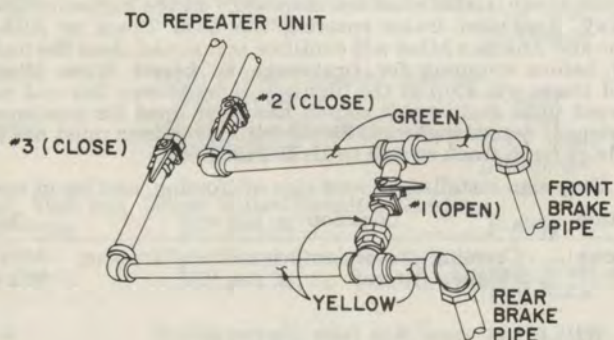


Note: If for any reason it becomes necessary to transfer control of air brakes to the helper engine located in the portion of the train **behind** the RAC car with the RAC air equipment in operation, the brake pipe hose connections must be changed. The forward brake pipe must be coupled to the portion of the train having the brake valve which is controlling the train. The rear brake pipe must be coupled to the other end of the train.

4. The repeater relay valve No. 5 is a variable valve and is employed to reestablish a satisfactory brake pipe pressure on the rear portion of train. A regulator and gage to indicate pounds of differential is provided. Trainline pressure on rear portion of train must not be increased above 90 PSI at RAC car. Preferred adjustment is to have the rear brake pipe 1.5 to 2 lbs. above the front brake pipe.

B. PROCEDURE FOR CUTTING THE RAC CAR OUT OF TRAIN.

1. Close the repeater relay cutout cocks Nos. 2 and 3.
2. Open the brake pipe bypass cock No. 1—**All located inside the car.**
3. The car diesel engine and compressor are to remain running except during layover time.



C. PROCEDURE FOR ADDING REPEATER AIR CAR TO A TRAIN WHEN REPEATER CAR AIR EQUIPMENT IS NOT TO BE USED.

1. Close the repeater relay cutout cocks Nos. 2 and 3.
2. Open the brake pipe bypass cock No. 1—**All located inside the car.**
3. Forward brake pipe must be coupled to portion of the train to which the road engine is attached.
Rear brake pipe must be coupled to the other end of the train. The angle cock on the unused brake pipe on each end of the car must be closed.

D. TRAIN OPERATION OF REPEATER AIR CARS.

1. With the repeater air car in operation, proceed with terminal air test as prescribed in the air brake rules and regulations.
2. All rules outlined in the air brake rules and regulations governing train handling shall be adhered to while repeater air car is part of any train.
3. If required, the repeater air car may be cut out by closing the repeater relay cutout cocks Nos. 2 and 3 and opening the brake pipe bypass cock No. 1—**All located inside car.** This provides for normal train operation without the repeater relay equipment operating.
4. If yard air is used to charge the train, it **must** be cut in ahead of the repeater air car.
5. The RAC car must not be kicked, dropped, or humped and must be handled next to switch engine when being cut into or out of train and when being moved to caboose track.
6. During a pickup or setout, or at any time the engine is separated from the train and the air car is in operation in the train, it is absolutely essential that the trainline angle cock be left open on the train.

E. LOSS OF MAIN RESERVOIR AIR ON RAC CAR.

1. The depletion of main reservoir air to below 100 lbs. will initiate a service brake pipe reduction in the forward and rear portions of the train. The rotating red light on top of car will operate.
2. In addition to the red rotating light, a radio signal will be initiated and will transmit a series of short beeps for a period of approximately ten seconds and then cease. It will reset itself automatically upon an increase of main reservoir pressure above 110 pounds.
3. If in power, throttle must be reduced to idle and automatic brake valve placed in full service zone until train stops.
4. If in dynamic braking, automatic brake valve must be placed in full service zone and dynamic braking lever handled as prescribed by rules.
5. Train must be immediately secured before determining reason for main reservoir air depletion.

F. SETTING RAC CAR OUT OF TRAIN

1. If it becomes necessary to set RAC car out of train, shut down compressor engine in car and secure car per rules.

Instructions for starting and shutting down compressor engine posted inside of car.

SPECIAL INSTRUCTIONS—GILA SUBDIVISION

RULE 7-B. Between Dome and Wellton:

Between MP 753.4 and MP 770.9 on No. 1 and No. 2 tracks, Red **CONDITIONAL STOP** signs and yellow **PROCEED PREPARED TO STOP** signs, for westward trains using No. 2 track, and eastward trains using No. 1 track, will be placed to left of track in direction of approach.

RULE 7-C. Yuma and PFE Yard: Freight trains arriving or departing Yuma Yard and Westward trains departing PFE Yard must receive proceed signal (green flag by day, green light by night), or oral authorization from yardmaster or his representative.

RULE 10-J. Speed signs for eastward movement on No. 1 track, Dome to Wellton are located to left of No. 1 track; speed signs for westward movement on No. 2 track, Wellton to Dome are located to left of No. 2 track, and are located as follows:

Eastward No. 1 Track		Westward No. 2 Track	
MP	Reading	MP	Reading
756.20	55	770.65	70-60
763.00	70-60	770.18	Thru X-over
766.00	Thru X-over		25
	25	765.00	to No. 1 track
768.72	to No. 2 track		55
	50	758.20	40

Other speed signs to left of track:

Eastward	Reading	Westward	Reading
MP 733.01	60	MP 792.54	70-60
MP 734.50	60	MP 829.25	50
		MP 854.25	50
		MP 979.37	70-60

RULE 21. Identification of superior trains must be made by eastward trains enroute Phoenix Subdivision between Yuma and Wellton to be applied at Wellton, and by westward trains enroute Phoenix Subdivision between Tucson and Coolidge to be applied at Coolidge. Reduce speed sufficiently to permit identification and comply with Rule 14(k).

RULE 82-A. Eastward trains originating Yuma, and westward trains originating PFE Yard or Tucson, enroute Phoenix Subdivision with same conductor and engineer must obtain two clearances, one endorsed Gila Subdivision and one endorsed Phoenix Subdivision. Phoenix Subdivision clearance and orders, if any, addressed to such trains at Yuma, PFE Yard or Tucson authorizes movement on Phoenix Subdivision.

RULE 83. Check of train register at Yuma by eastward trains enroute Phoenix Subdivision will apply at Wellton.

Check of train register at Tucson by westward trains enroute Phoenix Subdivision will apply at Coolidge.

RULE 83-A. At following stations only trains indicated will register:

Tucson } Trains originating or terminating.
 PFE Yard }

RULE 85. Within CTC limits, between East Yard and Wellton and Stockham and Picacho, a section of a regular train must not pass and run ahead of another section of the same schedule without first exchanging train orders with the section to be passed, each section to display signals if necessary.

Rule 93. Yard limits are established at the following locations:

West MP		East MP
732.50	Yuma	737.40
977.96	Tucson (No. 2 Track)	993.00
	Tucson (No. 1 Track)	992.09
	Tucson (Nogales Br.)	991.42
998.74	Sahuarita	1005.50
1040.00	Nogales	1049.89

Nogales: Trains arriving Nogales with not to exceed 2000 ft. in length unless otherwise instructed, will trail through spring derail in main track at west end of yard, proceed on main track and stop short of fouling point of crossover from main track to No. 1 yard track, west of Court Street. If yard crew is not available on arrival, road engine will be left attached to train.

RULE D-97. Will apply as follows:

On both main tracks between end of CTC, MP 732.45, Yuma and Subway, MP 734.26.

On both main tracks between PFE Yard and Stockham.

RULE 99-C. Will apply on Nogales Branch.

RULE 103. At the following locations, trains or engines moving under the provisions of Rules 771 and 776 must not enter the crossing until warning for vehicular traffic has been afforded by a member of the crew, or it is known that automatic warning devices are operating.

Station	Location	Mile Post
Stockham	End of double track—Prince Road	979.6
Bon	AS&R Spur	913.8
Maricopa	East siding switch, County Highway	897.8
Kino	West Switch—Ina Road	974.0

Toltec: Sound detector microphone installed on mast 75 feet west of Toltec Road Crossing. Eastward trains stopping west of crossing MP 928.6 on Toltec siding, before starting must sound whistle to lower or keep crossing gates down.

Sahuarita: When necessary to cross US-89 on Drill Track to AS&R Mine, and Anamax Mine, MP 999.76, west of Sahuarita during night hours, movements must be preceded by a member of train crew displaying lighted red fusee. Except in an emergency, trains must not stop while on the highway right-of-way. Eastward trains entering the Drill Track to AS&R Mine and Anamax Mine will continue across and clear the highway before stopping for brakeman to board train. Westward trains will stop at the highway right-of-way line and not proceed until main track switch has been lined for continued movement across highway. Switching movements must not be made at main track switch to Drill Track.

Stop sign installed on west side of crossing, east leg of wye.

Station	Location	MP
Aldona	Crossing protection private road crossing	
	Hughes Aircraft	992.4

RULE 104.

Derails on main track:

Nogales.... Spring point derail, facing westward movement, just west of west switch of first yard track north of main track may be trailed through in eastward movement.

Sahuarita: On AS&R spur, switch to derailing spur at entrance to AS&R yard is equipped with spring head rod and must be trailed through when moving into AS&R yard.

On Pima Spur, switch to derailing spur at entrance to Pima Yard is equipped with spring head rod and must be trailed through when moving into Pima Yard.

On Duval Spur, derail 9.03 miles east of initial switch and 2830 feet west of entrance to Duval Yard, is equipped with spring head rod and must be trailed through when moving into Duval Yard. Point derails are located east and west end of runaround track.

RULE 204. Trains of Gila and Phoenix Subdivisions with same conductor and engineer may be issued train orders on one Subdivision that affect their movement on Gila or Phoenix Subdivision.

RULE 221. PFE Yard, Tucson and Casa Grande are train-order offices only for trains originating.

RULE D-251. Will apply as follows:

On both main tracks between end of CTC, MP 732.45, Yuma and Subway MP 734.26.

Tucson: On both main tracks between PFE Yard and Stockham.

RULE 306. The following home signals equipped with triangular plate bearing the letter "P" have included in their control limits some special protective device. Absolute signals are listed as "P-A" or "P-SA."

Eastward Signals	Signals	Westward Signals
P-A	Spring switch, east end Colorado River bridge Spring switch, east end No. 1 Yard Track on No. 2 Track, MP 737.5	P-SA
P-7480	Collision Detector, Bridge 748.60	{ P-A East end Kinter
P-A Dome No. 1 Track	Collision detector, Ligurta underpass, MP 760.61	P-7607
P-7606 No. 2 Track		
P-7988	High Water Detector, Bridge MP 798.99	{ P-A West end Stoval
P-8608	High Water Detector, Bridge MP 862.03	{ P-A West end Bosque
P-8674	High Water Detector, Bridge MP 868.88	{ P-A West end Shawmut
P-8778	High Water Detector, Bridge MP 878.34	P-8807
P-8948	High Water Detector, Bridge MP 894.92	{ P-A West end Maricopa
P-A, East end Maricopa	High Water Detector, Bridge MP 898.96	P-8991
P-9488		
P-A	Spring switch, west end westward siding, Stockham	
P-9834	Spring Switch, west end crossover, Sixth Ave., Tucson	
P-I Westward Main track Tucson	Spring switch, west end of crossover, westward main track to eastward main track, Cherry Avenue	
P-I Eastward Main Track Tucson		
P-I Nogales Lead Tucson	Spring switch, west end of west lead, Cherry Avenue Spring switch, east end of double track, Cherry Ave.	{ P-SA East end double track, Cherry Ave.
	Spring switch, east end of crossover from westbound main to eastbound main, Cherry Avenue	{ P-SA west lead P-SA east lead
	East End of crossover from eastward main to east lead	P-SA east lead

AUTOMATIC BLOCK SIGNAL SYSTEM

RULE 505. Yuma: Main tracks between MP 734.26 and MP 737.50 are designated as follows:

- No. 1 track—To North
- No. 2 track—To South

Between MP 734.26 and MP 737.50 trains and engines may use main tracks in either direction, being governed by signal indication.

Signal 7333 governs westward movements through crossover to main track only and will remain dark until crossover switch is open.

Westward signal adjacent to No. 2 Track, MP 734.32 will display red aspect only as per Rule 290, Fig. "I." Trains and engines will be governed by Yardmaster's instructions before passing this signal.

Tucson: Westward Signal 9833 on eastward main track governs westward movement through crossover and displays stop indication until east crossover switch is lined for crossover movement to westward main track.

Eastward 2-unit Signal P-9834 top unit governs movements on eastward main track, bottom unit governs movements to Passenger Track No. 1.

When westward signal 9835 displays stop indication westward freight trains must not pass this signal if there is a westward passenger train in passenger track No. 1, except on instructions from yardmaster.

Trains moving on main track in either direction, will move between MP 987.7 at 36th St. and MP 985.48 at Cherry Ave. by block signals whose indications will supersede the superiority of trains.

SPRING SWITCHES

RULE 538. Spring switches equipped with facing point locks are located as follows:

Station	Location	Normal Position
East Yard . . .	East end of crossover from running track to Track No. 2 . . .	Track No. 2
Stockham . . .	West end westward siding . . .	Main Track
PFE Yard . . .	West end westward siding . . .	Westward Track

Spring switches not equipped with facing point locks are located as follows:

Station	Location	Normal Position
*Yuma	West leg of wye from running track	West leg of wye
	East leg of wye from running track	Running track
	Tail end of wye	West leg of wye
	East end Roundhouse Track No. 1	East leg of wye
	West end Roundhouse Track No. 1	Roundhouse Track No. 1
*Tucson	West end crossover, Stone Ave	Westward track
*Tucson	West end crossover from passenger tracks	Eastward Track

SPECIAL INSTRUCTIONS—GILA SUBDIVISION

Station	Location	Normal Position
Tucson	Spring switch, west end of crossover, westward main track to eastward main track, Cherry Ave.	Westward main track
Tucson	Spring switch, west end of crossover from eastward main track to Nogales Lead, Cherry Avenue	Eastward main track
Tucson	Spring switch, west end of west lead, Cherry Ave.	East lead
Tucson	Spring switch, east end of double track, Cherry Avenue	Main track
Tucson	Spring switch, east end of crossover from westward main track to eastward main track, Cherry Avenue	Crossover
Tucson	East end of crossover from eastward main track to east lead	East lead

*Equipped with switch point indicator.

**All engines to diesel facilities will use west leg of wye into roundhouse service track.

INTERLOCKING

RULE 606. Tucson: Limits extend on westward main track from eastward interlocking signal MP 985.15 to westward interlocking signal end of double track MP 985.50. On eastward main track from eastward interlocking signal MP 985.15 to westward interlocking signal end of double track MP 985.50, and from eastward interlocking signal MP 985.2 on Nogales lead to westward interlocking signal MP 985.4 and to westward interlocking signal on west lead MP 985.36.

Signals are under the control of Operator at PFE Yard.

LETTER-TYPE INDICATORS

RULE 705. Indicators located as follows:

Illum. Letter	On Signal	Approaching	Authorizes and requires movement as follows:
W	MP 986.8	Nogales Branch, Tucson	Westward trains must stop east of Indicator. When flashing white light is displayed train is authorized to proceed to PFE yard, or be governed by oral authority from yardmaster.

CENTRALIZED TRAFFIC CONTROL

RULE 760. Limits extend from eastward absolute signals at end of double track, East Yard, MP 737.38 to westward absolute signal at end of double track, Stockham.

East Yard: West switch crossover, between yard track No. 1 and eastward main track is hand operated, normal position for movements to drill track. Eastward absolute signal located on signal bridge just west of this switch governs movements through crossover to eastward main track when switch is lined for movement through crossover, and on drill track when lined for movement to drill track. Westward absolute signal located on drill track just east of this crossover governs westward movements on drill track.

Between Wellton and Dome, westward track is identified as No. 1 track and eastward track identified as No. 2 track. Signals are provided for movement of trains in either direction, on both main tracks, being governed by indications of absolute and automatic block signals. Crossovers equipped with dual control switches installed at MP 768.

PFE Yard: CTC Limits extend from MP 987.7 to east end PFE Yard MP 987.92.

GENERAL REGULATIONS

RULE 825. Instructions for applying hand brakes:

Yuma: Freight trains... {Two hand brakes on east end, Four hand brakes on west end.

East Yard: Freight trains... {Two hand brakes on east end, Five hand brakes on west end.

Tucson: Passenger trains—To prevent uncontrolled movement, rail skid must be placed under west end of train and a sufficient number of hand brakes must be applied, but not less than two brakes on west end and two brakes on east end, unless outbound crew takes charge and engine remains attached.

Tucson and PFE Yard:

Freight trains, 1 to 10 cars... All hand brakes.

Freight trains, 11 to 20 cars... 10 hand brakes west end.

Freight trains, 21 to 49 cars... {10 hand brakes west end, 5 hand brakes east end.

Freight trains, 50 cars or more. {15 hand brakes west end, 10 hand brakes east end.

Hand brakes will not be applied if outgoing crew takes charge of train on arrival, and inbound crew is advised by Yardmaster that engine is not to be detached and no switching is to be performed on the train. Hand brakes will not be applied if switch crew takes charge of train on arrival.

Hand brakes on outbound trains must not be released until engine is coupled to train, air test completed, and blue sign removed.

Portable rail skids are hung on posts at the following locations:

Tucson: West end No. 1 passenger track.

Kinter: West end of siding.

Mohawk: East end of siding. West end of siding.

Sahuarita: Pima Mine switch off AS&R drill track. Duval Mine switch off Anamax drill track. Duval Mine at east and west end of run-around track.

Refer to Rule 825, All Subdivisions.

RULE 827. Dragging and/or derailed equipment detectors and indicators installed at the following locations:

MP	Location
740.4	Between East Yard Yuma and Fortuna
752.45	Between Dome and Kinter
773.20	Between Noah and Wellton
780.40	Between Colfred and Noah
788.60	Between Colfred and Mohawk
*790.0	Between Colfred-Mohawk
796.60	Between Mohawk and Stoval
805.40	Between Stoval and Aztec
815.60	Between Aztec and Stanwix
825.00	Between Stanwix and Sentinel
836.30	Between Sentinel and Piedra
843.10	Between Piedra and Theba
852.00	Between Theba and Gila
859.80	Between Gila and Bosque
866.40	Between Bosque and Shawmut
873.00	Between Shawmut and Estrella
879.15	Between Estrella and Mobile
886.40	Between Mobile and Enid
893.60	Between Enid and Maricopa
903.60	Between Maricopa and Bon
912.47	Between Bon and Casa Grande
922.80	Between Casa Grande and Toltec
930.80	Between Toltec and Eloy
940.70	Between Picacho and Wymola
947.70	Between Wymola and Red Rock
954.50	Between Red Rock and Naviska
962.70	Between Naviska and Rillito
971.60	Between Rillito and Kino
976.40	Between Kino and Jaynes

*Revolving red light mounted on Hot Box Detector instrument house at MP 790.0.

HOT BOX DETECTORS

Illum. Letter	On Signal	Approaching	Location of Readout
H.....	Westward Absolute Signal E.E.	Wellton	M.P. 769.2 Wellton
W.....	7722	Noah	
H.....	7742	Noah	Eastward Absolute Signal E.E. Noah
W.....	7743	Wellton	
H.....	8035	Stoval	Westward Absolute Signal W.E. Stoval
W.....	8054	Aztec	
W.....	8073	Stoval	
H.....	8092	Aztec	Eastward Absolute Signal E.E. Aztec
W.....	8322	Piedra	
H.....	8323	Sentinel	Westward Absolute Signal W.E. Sentinel
W.....	8349	Sentinel	
H.....	8378	Piedra	Eastward Absolute Signal E.E. Piedra
H.....	Westward Absolute Signal E.E. Estrella	Estrella	Westward Absolute Signal W.E. Estrella
W.....	8778	Mobile	
H.....	8806	Mobile	Eastward Absolute Signal E.E. Mobile
W.....	8807	Estrella	
H.....	P-8991	Maricopa	Westward Absolute Signal W.E. Maricopa

Illum. Letter	On Signal	Approaching	Location of Readout
W.....	8992	Bon	
W.....	9051	Maricopa	
H.....	9052	Bon	Eastward Absolute Signal E.E. Bon
W.....	9398	Wymola	
H.....	9399	Picacho	Westward Absolute Signal W.E. Picacho
H.....	Eastward Absolute Signal W.E. Wymola	Wymola	Eastward Absolute Signal E.E. Wymola
W.....	9600	Rillito	
H.....	9601	Naviska	Westward Absolute Signal W.E. Naviska
W.....	9619	Naviska	
H.....	9640	Rillito	Eastward Absolute Signal E.E. Rillito

SCANNER SITES

MP	Type	Direction(s)	Location
740.2	C	Both	East Yard-Fortuna
772.7	A	Both	Wellton-Noah
790.0	C	Both	Colfred-Mohawk
806.3	A	Both	Stoval-Aztec
834.9	A	Both	Sentinel-Piedra
851.3	C	Both	Smurr-Gila
878.7	A	Both	Estrella-Mobile
902.0	A	Both	Maricopa-Bon
922.0	C	Both	Toltec-Casa Grande
941.4	A	Both	Picacho-Wymola
961.7	A	Both	Naviska-Rillito
979.4	D	Eastward	*Stockham

*Readout at PFE Yard.

Refer to Rule 827, All Subdivisions.

RULE 827-A. Nogales Branch: Eastward trains handling tank cars containing Flammable Compressed Gas will stop at the runaround track at MP 1045 and inspect entire train. Unsafe cars are to be set out on the runaround track and Chief Train Dispatcher immediately notified.

Refer to Rule 827-A, All Subdivisions.

RULE 872. PFE Yard, Tucson and Yuma: Enginemen taking charge of engines will consider engines as having been amply supplied with water, fuel, sand and other supplies.

AIR BRAKE RULES

RULE 2. Taking Charge of Engines.

Section A, will apply at:

Yuma, Tucson, PFE Yard and Nogales

RULE 17. Retaining valves must be used on freight trains on descending grades as follows:

Sahuarita: AS&R, Pima, Anamax and Duval mines.

With dynamic brake in operation:

Permissible Tons Per Unit Without Retaining Valves

	Basic Dynamic Brake		Extended Range Dynamic Brake		
	4 Axle	6 Axle	4 Axle	6 Axle	8 Axle
With dynamic brake in operation and WITH pressure maintaining system of braking.....	1000	1500	1200	1800	2400

If permissible tonnage is exceeded, one retaining valve must be used for each 150 tons in excess thereof.

Refer to Air Brake Rule 17, All Subdivisions.

SPECIAL INSTRUCTIONS—GILA SUBDIVISION

RULE 24. Will apply at PFE Yard.

RULE 24-C. Sahuarita: Before making any switch moves at AS&R, Pima, Anamax or Duval mines, it must be known that air brake system on each car being handled is fully charged, air hoses coupled between engine and cars and angle cocks properly positioned.

Ten minutes must be allowed to charge air brake system on cars picked up at AS&R, Pima, Anamax and Duval mines before making air brake test. All brakes must be operative on loaded and empty cars before leaving AS&R, Pima, Anamax and Duval mines.

After fully charging air brake system, engineer will make a 20-pound brake pipe reduction, and conductor will see that a member of crew observes each car to see that brakes are properly working, then release brakes and wait five minutes before switch move commences. In addition, engineer will check brake pipe leakage as prescribed by Air Brake Rule 22.

RULE 24-E. Will apply at PFE Yard, Tucson and Yuma.

RULE 24-F. Will apply as follows:

Casa Grande: To all switching movements on all Tracks at AS&R, Sacaton Mill.

Tucson: When making movements either direction between PFE Yard and areas outside PFE Yard but within yard limits.

Responsibility to know that above has been done rests upon yard engineer and yard foreman.

Carman on duty at PFE Yard will couple air hose and make test as prescribed by Air Brake Rule 24-F.

RULE 24-G. Will apply at Yuma.

RULE 33. Sahuarita: AS&R, Pima, Anamax and Duval mines.

Maximum tonnage per operative brake 140½ tons.

All retainers will be used. Retainers will be used in high pressure position on loaded cars and low pressure position on empty cars. Descending movement will not be made unless locomotive has an operative dynamic brake but not more than 15 cars for each four axles of dynamic brake at speed not exceeding 15 MPH.

MISCELLANEOUS

1. Casa Grande: Casa Grande Cotton Oil Mill spur. Trainmen must not operate beyond operating limit sign located approximately 600 ft. beyond point of switch.

2. Rillito: Cars must not be kicked or dropped into Arizona Portland Cement Spur, and cars must not be left standing on this spur west of insulated joints at east end of circuit actuating highway crossing signals. Chains across crusher spur at each end of pit are secured by snaps to posts, and may be unfastened to move cars to or from pit. Chains must be fastened across track when there is no car spotted over pit.

Derail on crusher spur, located 80 feet east of crusher pit, must not be lined for movement into spur until it is known that track over pit is ready for the movement.

3. Plata: AS&R belt loader on scale. Engine and cars, other than ore cars, must not pass over scale track.

4. Sahuarita: At AS&R plant, spur to Rod & Ball Mill. Cars must not be moved beyond face of building.

All trains must stop before entering or departing tracks at AS&R Mines, and inspect all switches to see that they are in proper position and in working order.

5. Nogales Branch: Do not block Hughes Road crossing with switching operations between 7:00 A.M. and 8:15 A.M. and between 4:00 P.M. and 5:15 P.M.

6. PFE Yard: Look out for ice and material alongside PFE tracks.

7. Engines listed must not operate on tracks shown below:

Class of Engine	Restricted Tracks
All engines . . . Smurr	Unloading pit on spur, Gila Feed Yards.
All engines . . . Casa Grande . . .	Track scales on cotton oil mill spur, and Casa Grande Warehouse spur.
All engines . . . Seco	50 ft. south of road crossing on East Mill Spur.
All engines . . . Rillito	On open pit at Arizona Portland Cement Co. Trainmen must not cross pit, but must go around pit via stairway.
All engines . . . Plata	Track scales, AS&R track.
All engines . . . Sahuarita	Track scale, Pima mine concentrate track.

8. LOAD LIMIT (car and contents):

Yuma-PFE Yard, except: 263,000 pounds
 Gross weight of 263,000 pounds or less applies to uniformly loaded four-axle cars having trucks spaced 23 feet 0 inches or more center to center and minimum axle spacing of 5 feet 6 inches.

Gross weight uniformly loaded four-axle cars with minimum axle spacing of 6 feet 0 inches, and minimum distance 37 feet 0 inches center to center of trucks; also, wheels 38 inches or more in diameter 315,000 pounds

Ore cars SP 333500 to 334399 and SP 341000 to 341335 and ATSF 64000 to 64099 281,000 pounds

Hopper cars series SP 464000 281,000 pounds

PFE Yard—Nogales, except: 263,000 pounds
 Gross weight uniformly loaded four-axle cars with minimum axle spacing of 6 feet 0 inches, and minimum distance 37 feet 0 inches center to center of trucks; also, wheels 38 inches or more in diameter 315,000 pounds

Ore cars SP 333500 to 334399 and SP 341000 to 341335 and ATSF 64000 to 64099 between MP 1004.8 and PFE Yard including AS&R spur, Anamax, Pima and Duval mines

Sahuarita 281,000 pounds

Hopper cars series SP 464000 281,000 pounds

Unless authorized by Superintendent, heavier loads must not be handled.

9. SPEED RESTRICTIONS FOR OTHER THAN MAIN TRACKS

	With Caution Not Exceeding MPH
Centralized Traffic Controlled sidings, turnouts and crossovers	25
Through other sidings, yard and other tracks, wyes, balloon tracks, crossovers and turnouts Except:	10
Spur to AS&R mine, Sahuarita, Eastward	20
Westward	15
Spur to Pima mine, Sahuarita, Eastward	20
Westward	15
Spur to Anamax mine, Sahuarita, Eastward	25
Except through curves #2 and #3	20
Westward	15
Spur to Duval mine, Sahuarita, Eastward	25
Westward	15

SPECIAL INSTRUCTIONS—GILA SUBDIVISION

SPEED RESTRICTIONS FOR TRAINS: Maximum speed of trains in territory shown below is subject to further restrictions applicable to engines in the train as shown in **SPEED RESTRICTIONS FOR ENGINES** appearing on pages 14, 15 and 16 and **MAXIMUM SPEED PERMITTED WITH CERTAIN EQUIPMENT**, appearing on page 18 of Timetable for All Subdivisions. Speed must be further reduced as prescribed by speed signs, except as specifically authorized by Special Instructions herein, or by timetable bulletin.

Maximum authorized speed for freight trains is 55 MPH except BSMFF, APLAA, APLAB and GSLAF are authorized to operate at Column One speeds provided train contains no restricted cars, or empties except cabooses, and does not exceed 80 tons per operative brake and/or 120 cars.

Trains BSMFY, LAEST, LAHOT, WCESP, PXESP, YUESP and NGESP are authorized to operate at Column One speeds not exceeding 65 MPH provided they contain no restricted cars, or empties except cabooses, and do not exceed 80 tons per operative brake and/or 120 cars.

Trains BSMFY and SCLAT with operative radio controlled remote locomotives may operate at Column One speeds not exceeding 65 MPH provided train contains no restricted cars, or empties except cabooses, and does not exceed 80 tons per operative brake and/or 150 cars.

Other freight trains may be authorized by train order to operate at Column One speeds not exceeding 65 MPH provided they contain no restricted cars, or empties except cabooses, and do not exceed 80 tons per operative brake and 120 cars.

Eastbound freight trains arriving main track PFE Yard will reduce train speed to 10 MPH one train length before spotting for fuel to allow for train inspection.

Eastbound freight trains arriving main track PFE Yard Tucson, do not exceed 15 MPH while passing yard office building.

Westbound freight trains departing Main Track PFE Yard, will not exceed 15 MPH until caboose passes the yard office building.

EASTWARD			PSGR TRAINS	FRT	WESTWARD			PSGR TRAINS	FRT
MP	MP	Column:	1	2	MP	MP	Column:	1	2
YUMA to TUCSON:					TUCSON to YUMA:				
732.10 to 733.01					987.75 to 982.73			35	35
(Thru Turnout)			25	25	982.73 to 979.37				
733.01 to 734.50					(End Double Track)			50	50
(Eastward)			60	55	979.37 to 936.10			70	55
734.50 to 737.62					936.10 to 913.70			50	50
(Track No. 1 and No. 2)			60	55	913.70 to 882.00			70	55
737.62 to 737.83					882.00 to 875.00			55	55
(End L.A. Divn.)			70	55	875.00 to 864.00			60	55
737.83 to 746.58			70	55	864.00 to 852.25			55	55
746.58 to 748.58			55	55	852.25 to 825.25			70	55
748.58 to 756.20**			40	40	825.25 to 822.40			60	55
756.20 to 763.00**			55	55	822.40 to 794.30			70	55
763.00 to 770.72**			70	55	794.30 to 792.54			60	55
770.72 to 771.00**			50	50	792.54 to 771.00			70	55
771.00 to 792.54			70	55	771.00 to 770.72*			50	50
792.54 to 794.30			60	55	770.72 to 763.00*			70	55
794.30 to 822.40			70	55	763.00 to 756.20*			55	55
822.40 to 825.25			60	55	756.20 to 748.58			40	40
825.25 to 852.25			70	55	748.58 to 737.83				
852.25 to 864.00			55	55	(Begin L.A. Divn.)			70	55
864.00 to 875.00			60	55	737.83 to 737.62			70	55
875.00 to 882.00			55	55	737.62 to 735.25*			60	55
882.00 to 913.70			70	55	735.25 to 734.50**			40	40
913.70 to 936.10			50	50	737.62 to 734.50**			60	55
936.10 to 979.37			70	55	734.50 to 732.10			25	25
979.37 to 982.73					(Thru Turnout)				
Begin double track			50	50					
982.73 to 985.19			35	35					
985.19 to 985.27			25	25					
985.27 to 987.75									
except			35	35					
*Track No. 1									
**Track No. 2									
DOME to WELLTON (No. 1 Track):					WELLTON to DOME (No. 2 Track):				
748.58 to 756.20			40	40	770.84 to 770.65			50	50
756.20 to 763.00			55	55	770.65 to 763.00			70	55
763.00 to 770.72			70	55	763.00 to 756.20			55	55
770.72 to 770.84			50	50	756.20 to 748.58			40	40
YUMA to EAST YARD (No. 1 Track):					EAST YARD to YUMA (No. 2 Track):				
733.01 to 734.50			25	25	737.51 to 737.49			35	35
734.50 to 737.51			60	55	(Thru Turnout)			60	55
					737.49 to 734.50			25	25
					734.50 to 732.10				

SPEED RESTRICTIONS FOR TRAINS—Continued

EASTWARD		ALL TRAINS	WESTWARD		ALL TRAINS
MP	MP		MP	MP	
PFE YARD to NOGALES:			NOGALES to PFE YARD:		
984.18 to 985.10		10	1049.89 to 1048.50		10
985.10 to 987.10		20	1048.50 to 1040.00		20
987.10 to 1040.00		25	1040.00 to 987.10		25
1040.00 to 1048.50		20	987.10 to 985.10		20
1048.50 to 1049.89		10	985.10 to 984.18		10

Trains handling tank cars containing Flammable Compressed Gas must not exceed 55 MPH. Where maximum authorized speed is less than 55 MPH and more than 25 MPH, train must be operated at 5 MPH less than maximum authorized speed and on the Nogales Branch must not exceed 10 MPH at the following locations:

- Between MP 985 and MP 993
- Between MP 1002 and MP 1004
- Between MP 1010 and MP 1011
- Between MP 1041 and MP 1049.8

Nogales Branch: When engines of the following classifications are operated on the Nogales Branch, they must not exceed speeds shown between mile post locations as listed where authorized maximum speeds as shown above are greater:

Class of Engines	MP	MP
	1017.10	1042.78 to
	to 1017.35	1046.37
GF 850-1	25	25

Trains handling tank cars containing Flammable Compressed Gas must not exceed 55 MPH. Where maximum authorized speed is less than 55 MPH and more than 25 MPH, train must be operated at 5 MPH less than maximum authorized speed and must not exceed 30 MPH at the following locations:

- Gila Between MP 854 and MP 857
- Casa Grande Between MP 918 and MP 919
- Eloy Between MP 933 and MP 933.5
- Tucson Between MP 979.6 (Prince Road) and PFE Yard

REFER TO SPEED RESTRICTIONS FOR OTHER THAN MAIN TRACKS ON PAGE 24

SPECIAL INSTRUCTIONS—PHOENIX SUBDIVISION

RULE P. LOCATION OF OVERHEAD AND SIDE STRUCTURES NOT STANDARD CLEARANCE ON MAIN TRACK AND SIDINGS

Mile Post	Location	Description
778.00	Gila River bridge	Side
891.00	Agua Fria River bridge	Side
914.00	Salt River bridge	Side
959.30	Gila River bridge	Side
971.30	Hayden Branch	
to		
971.77	Rock cuts	Side
972.40	Tunnel No. 1	Side and overhead
972.50	Gila River bridge	Side
973.00	Rock cut	Side
973.04	Rock cut	Side
973.07	Rock cut	Side
976.00	to	
977.00	Rock cuts	Side
980.00	to	
982.00	Rock cuts	Side
983.50	Rock cut	Side
985.30	Gila River bridge	Side
985.50	Rock cut	Side
988.30	Rock cut	Side
988.50	Tunnel No. 2	Side and overhead
990.00	Tunnel No. 3	Side and overhead
992.30	Rock cut	Side

RULE 7-C. Phoenix Yard: Freight trains arriving or departing must receive proceed signal (green flag by day, green light by night) or oral authorization from yardmaster or his representative.

RULE 10-H. EXCEPTION:

Litchfield, Tempe and Chandler Branches. When a yellow flag is required it will be displayed one-half mile from point of restriction.

RULE 10-J. Speed signs to left of track:

Westward	Reading
MP 892.80	50
Eastward	Reading
MP 905.62	20

RULE 15. EXCEPTION:

Litchfield, Tempe and Chandler Branches. The explosion of a torpedo requires movement at restricted speed for one mile from point where torpedo was exploded.

RULE 82-A. Trains authorized at Phoenix Yard or Hayden enroute Gila Subdivision with same conductor and engineer are thereby authorized on both Phoenix and Gila subdivisions.

Trains operating in ore service between Hayden and Ray Junction need not obtain clearance at Hayden.

RULE 83-A. At following stations only trains indicated will register:

- Hayden.....Trains operating via Florence.
- Magma.....Trains to and from Hayden Branch and trains instructed by train order. Register located in telephone booth at cross-over.
- Phoenix Yard...Trains originating or terminating.

RULE 93. Yard limits are established at the following locations:

West MP		East MP
770.72	Wellton	782.00
	(End of CTC off Gila line to Phoenix line)	(Phoenix line)
864.34	Dixie	867.10
874.22	Buckeye	877.02
888.80	Litchfield Jct.	890.60
	Litchfield Jct. (Litchfield Branch)	End of track
894.23	Phoenix	916.14
	Tempe (Tempe Branch)	End of track
920.45	Mesa	924.5
923.6	McQueen (Chandler Branch)	Dock 943.2
925.66	Gilbert	928.48
934.45	Germann	939.71
940.50	Queen Creek	943.02
946.84	Magma	951.02
	Magma (Hayden Branch)	950.45
986.84	Ray Jct.	988.72
998.90	Hayden	1004.90

RULE 99. Within A-PB Limits between Ray Jct. and Hayden flag protection to rear of train is not required except when necessary to make reverse movements.

RULE 99-C. Will apply as follows:

On Hayden Branch—Between Magma and Ray Junction.

RULE 103. A flagman must precede all movements over:

Pipeola: Crossings within Southern Pacific Pipe Line reservation.

Phoenix: Zeb Pearce track No. 207 over Lincoln Street.

Tovrea: Washington Street.

Tempe: Fifth Street.

University Drive (Transmission Road) on spur serving Arizona Public Service Plant. All train movements must stop before proceeding over crossing.

Westward movements from Tempe Branch to Main track at 13th Street must stop at stop sign located 128 feet east of 13th St. crossing and wait until crossing gates are down before proceeding.

Crossing at MP 916.46, Creamery Spur, is equipped with stop signs. Trains and engines must stop and not enter crossing until it is known that automatic crossing gates are down. Crossing is equipped with keydown boxes. It is necessary to use S.P.T. Switch Key to operate or restart crossing signals. Insert switch key in either of the key release boxes and turn slowly one complete turn to the right. For eastward movement, key release box post is located on southwest side of crossing. For westward movement, key release box post is located on southeast side of crossing.

Old Creamery Spur—Stop sign installed for westward movement over Dorsey Lane. A Flagman must precede all westward movements over this crossing.

Mesa: Spur track on south side of Main track, South Extension Road, MP 920.98, is equipped with stop signs and key down release. It is necessary to use S.P.T. switch key to operate or re-start crossing signals. Insert key in either of the key release boxes and turn slowly one complete turn to the right. For eastward movement, key release box is on instrument case on southwest side of crossing. For westward movement, key release box is on instrument case southeast side of crossing.

West Chandler.....Tempe Branch Williams Field Road—MP 923.00

Litchfield.....Stop signs installed and a flagman must precede all movements over Van Buren Avenue MP 891.26.

RULE 104. Normal position of rigid switches at the end of double track and at junctions, is as follows:

- Litchfield Jct. Litchfield Br., for Phoenix line
- Tempe Jct. Tempe Br., for Phoenix line
- McQueen Chandler Br., for Phoenix line
- Magma Magma-Arizona RR main track, for back track
- Ray Jct. Crossover MP 987.7 for Hayden Br.
- Ray Jct. KCCRR main track, for yard track
- Hayden KCCRR line for Hayden Br.
- Hayden SMARR main track, for Hayden Br.

RULE 204. Trains of Gila and Phoenix Subdivisions with same conductor and engineer may be issued train orders on one Subdivision that affect their movement on Gila or Phoenix Subdivision.

RULES 211 and 705. Mesa: Letter-type indicator located on stub mast MP 921.9 for westward trains and on signal 9210 for eastward trains.

RULE 306. The following home signals equipped with triangular plate bearing the letter "P" have included in their control limits some special protective device. Absolute signals are listed as "P-A" or "P-SA."

Eastward Signals	Protection	Westward Signals
P-7916	High water detector, bridge 792.67	P-7927
P-8406	High water detector, bridge 841.30	P-8415
P-8414	High water detectors, bridges 842.75 and 842.86	P-8431
P-8550	High water detector, bridge 857.56	P-8589
P-8662	High water detector, bridge 866.93	P-8673
P-9052	Spring switch, west end passenger lead, Phoenix	
P-9218	Barricade detector for Dead End Streets MP 922.8	P-9231
P-9290	High water detector, bridge 933.71	P-9351
P-9396	High water detector, bridge 941.12	P-9415
P-9756	High water detector, bridge 976.88	P-A, MP 977.1

AUTOMATIC BLOCK SIGNAL SYSTEM

RULE 505. Phoenix: Crossing—ATSF Wye: If signal indicates "Stop" trains and engines must stop, and if wye is clear of intersecting movement, may then proceed as prescribed by Rule 507, but must provide flag protection on intersecting track unless derail is known to be in derailing position.

Phoenix: Top unit of Signal P-9052 governs eastward movement on main track and lower unit of Signal P-9052 governs eastward movement through spring switch to Union Station tracks. Trains or engines to move from main track to passenger lead must stop before reaching Signal P-9052 unless spring switch has been lined for passenger lead, and signals display proceed indication.

Signal protection is provided for westward movement from Passenger Station to main track and for westward movements on new freight main. Push buttons and pilot lights installed in box mounted on side of signal case 9057 with time-release feature, to clear signals on one track when the control circuit on the other track is occupied.

Refer to Rule 505, All Subdivisions.

Coolidge: Trains moving on main track in either direction between Signal 9623 and Signal 9616 will move by block signal indication which will supersede the superiority of trains.

When Signal 9623 displays stop indication and letter "S" is not displayed, westward trains after stopping must obtain permission from train dispatcher before proceeding under the provisions of Rule 507 or entering the siding.

When Signal 9616 displays stop indication eastward trains after stopping must obtain permission from train dispatcher before proceeding under provisions of Rule 507 or entering the siding.

Main track or siding must not be occupied or fouled except as authorized by signal indication or the train dispatcher.

Eastward trains on siding must obtain train dispatcher's permission before fouling main track to proceed to beginning of CTC regardless of the aspect displayed in eastward absolute signal and after permission obtained from train dispatcher, **Rule 81-A must be complied with before fouling main track.**

RULE 516. Overlap posts:

- Tolleson . . . 450 feet east of Signal 8958 . . . Eastward trains
- Tolleson . . . 750 feet east of MP 895.00 . . . Westward trains
- 23rd Ave. Phoenix . . . Middle of siding . . . Eastward trains
- 23rd Ave. Phoenix . . . Middle of siding . . . Westward trains

SPRING SWITCHES

RULE 536. Hayden Jct.: Switch point indicator now in service at MP 1001.81, ore track, will display green indication when switch is in full normal or full reverse position and will display red indication if switch is not in full normal or full reverse position. Switch target will indicate position of switch point. Trains and engines making trailing movement over this switch may leave switch in position to which forced by trailing movement.

RULE 538. Spring switches equipped with facing point locks are located as follows:

Stations	Location	Normal Position
Phoenix	Main track at passenger lead	Freight lead
Hayden	700 feet west of KCC gate	Main track derail
*Hayden	MP 1001.81	Ore track

*Equipped with switch point indicator.

LETTER-TYPE INDICATORS

RULE 705. Indicator located as follows:

Illum. Letter	On Signal	Approaching	Authorizes and Requires Movement as follows:
S	9623	East switch Coolidge	Enter siding and remain in siding until authorized by timetable or train order authority to proceed.

ABSOLUTE-PERMISSIVE BLOCK

RULE 740. Hayden-Ray Jct.: Limits extend between absolute signal MP 988.7 and absolute signal MP 998.9.

CENTRALIZED TRAFFIC CONTROL

RULE 760. Limits extend from eastward absolute signal east of east switch of siding, Coolidge, to westward absolute signals east of east switch of crossover to Phoenix line and at fouling point of north siding Picacho.

GENERAL REGULATIONS

RULE 821. Hayden Branch: Eastward trains must approach stop sign at MP 984.66 and westward trains must approach stop sign at MP 984.80 prepared to stop until it can be ascertained that Wooley Wash track is safe for passage of trains.

During and after heavy rains and run-off when there are indications that gravel or debris may be found on Wooley Wash track, trains must stop at these stop signs and not proceed until it has been ascertained that track is safe for the passage of trains.

Maximum speed across Wooley Wash must not exceed 10 MPH.

High water detector at MP 972.09, Hayden Branch, equipped with revolving red light. Trains must approach structure at MP 972.09 prepared to stop until it is ascertained that

structure is safe for passage of trains. Train crew must then notify train dispatcher so that Maintenance of Way personnel can be contacted to re-set high water detector and inspect structure at MP 972.09.

RULE 827. Dragging and/or derailed equipment detectors and indicators installed at the following locations:

MP	Location
775.50	Between Wellton and Roll
808.90	Between Kofa and Horn
880.00	Between Buckeye and Litchfield Jct.
899.00	Between Fowler and Pipeola
911.00	At Kendall
954.00	Between Magma and Coolidge
970.30	Between Florence and Ray Jct.
975.20	Between Florence and Ray Jct.
976.80	Between Picacho and Coolidge
979.75	Between Florence and Ray Jct.

HOT BOX DETECTORS

SCANNER SITES

MP	Type	Direction(s)	Location
856.5	C	Both	Gillespie-Arlington
953.0	C	Both	Magma-Coolidge
798.0	C	Both	Roll-Kofa

Refer to Rule 827, All Subdivisions.

RULE 827-A. Trains handling cars containing Flammable Compressed Gas will stop and inspection will be given entire train both sides at the following locations:

Westward.....Baseline Road east of McQueen to determine that there is no obvious leakage of Flammable Compressed Gas and that there is no other unsafe condition of equipment before proceeding.

Refer to Rule 827-A, All Subdivisions.

RULE 872. Phoenix: Enginemen taking charge of engines will consider engines as having been amply supplied with water, fuel, sand and other supplies.

AIR BRAKE RULES

RULE 2. Taking Charge of Engines.

Section A, will apply at:

Phoenix

RULE 17. Refer to All Subdivisions.

RULE 21. Phoenix: Trainmen must not couple air hose on outgoing trains at Phoenix until train is made up and caboose and road engine are on train. Coupling caboose and road engine to train will be considered as an indication that the train is made up and switchmen have completed their work. Switchmen must not perform switching on or couple other cars to a train on which the caboose and road engine have been attached without instructions from the yardmaster who will see to it that members of the train crew are notified in advance. After train is so made up switchmen must not place cars or engines behind or ahead of train in the same track.

RULE 24-G. Will apply at Phoenix.

MISCELLANEOUS

1. Phoenix Yard: All cars 65 ft. or longer must be chained, not coupled, thru 27-degree curves on 3rd St. River track between Grant Street and Buckeye Road. 85 ft. T.O.F.C. flats must be chained from Grant Street to spot and return.

2. Litchfield: Gate at entrance Goodyear Aircraft spur is locked with Government lock, and to gain entrance a long and short sound of whistle will be notification to watchman on duty to take care of the opening and closing of the gate.

3. Normal Jct.: Switch serving Smitty's Big Town MP 917.46 has close clearance account side wall on underpass will not permit trainmen to throw switch with ease. Trainmen must use caution and throw switch with care.

4. Hayden Branch: Cars bearing "Exceed Plate C" symbol or words "Excess Height" must not be operated between Magma and Hayden.

Crew of eastward train, before leaving Magma, will make visual inspection of their train to insure there are no restricted cars in their train.

5. Hayden: Weigh-in-motion scale located on Kennecott Copper Company tracks west of ore bins on lead track to ore dump. Scales are equipped with three bi-directional traffic light signals equipped to display three aspects. Traffic light signals govern ore train speeds as follows: Signals will light when engine passes over sensor located beyond first signal in direction of travel. Train must not exceed four MPH until last car has passed over scale. Four MPH or under, signals will display green aspect, yellow aspect when approaching overspeed and red aspect for overspeed. When yellow or red aspect appear on signals, speed must be reduced accordingly. If speed is reduced accordingly and signals continue to show red aspect, Chief Dispatcher's office must be notified of conditions as soon as possible.

Kennecott Copper Corporation Railroad between Hayden and Hayden Smelters is operated by the Tucson Division, is within Hayden yard limits, S.P. Rules apply.

Kennecott Copper Company has installed three signal lights at the entrance to the main track, that portion in front of KCC smelter. Lights are located at the three entrances, which are as follows:

1. Hayden Junction.
2. The lower track from ASARCO.
3. The upper track from ASARCO.

Signal indications are: Yellow. Proceed with Caution.
Red . . . Stop.

When signal system displays a red indication, SP crews will try to locate KCC switch engine on or around main track in front of the smelter. If KCC switch crews cannot be seen working in the vicinity of the smelter, then call the Agent at Hayden, who will report the red signal to the KCC guard shack at the main entrance. When light remains red and Agent has been notified, or crew cannot reach Agent at Hayden, SP may go by red signal preceded by flagman to the point where SP leaves the main track in front of KCC smelter.

Main track in front of KCC smelter shall be that portion from the derail to the ASARCO upper track; also from the derail to ASARCO lower track, also known as the entrance to the bullion hole.

Back-up hose must be used when shoving cars Hayden to Hayden Smelters.

Maximum speed permitted between Hayden and Hayden Smelters is 15 MPH. Grade is 2.2% descending Hayden Smelter to Hayden.

6. Engines listed must not operate on tracks shown below:

Class of Engine	Restricted Track
AS600 series	
EF600 series	
ES600 series	
GF600 series	
EP600 series	
EF850-B	
GF850	Hayden Branch.....All tracks.
All engines	Hayden.....On trestles to old ore bins and over scales, AS&R tracks.
All engines	Hayden.....Beyond east derail located east of switches of sidings of San Manuel Arizona Railroad.
EF 630-1	}...Normal Jct....Spur serving Smitty's Big Town MP 917.46.
EF 850B	
All engines	Cashion.....Beyond clear point spur serving R and R leasing.

7. LOAD LIMIT (car and contents):

Wellton-Picacho, except: 263,000 pounds
 Gross weight of 263,000 pounds or less applies to uniformly loaded four-axle cars having trucks spaced 23 feet 0 inches or more center to center and minimum axle spacing of 5 feet 6 inches.
 Gross weight uniformly loaded four-axle cars with minimum axle spacing of 6 ft. 0 in. and minimum distance 37 ft. 0 in. center to center of trucks; also, wheels 38 in. or more in diameter. 315,000 pounds
 Ore cars SP 341000 to 341335 and ATSF 64000 to 64099 281,000 pounds
 Litchfield Jct.-Litchfield Park 240,000 pounds
 Tempe-West Chandler 240,000 pounds
 McQueen-Dock 263,000 pounds
 Magma-Hayden 263,000 pounds
 Except:
 KCC ore cars between Ray Jct. and Hayden 266,000 pounds
 Ore cars SP 341000 to 341335 and ATSF 64000 to 64099 281,000 pounds
 Cars having truck centers 30 ft. 0 in. or less 240,000 pounds
 Except: UTLX, GATX and ACFX sulphuric acid tank cars having truck centers 30 ft. 0 in. or less are permitted to operate with load limit 263,000 pounds
 Unless authorized by Superintendent, heavier loads must not be handled.

8. SPEED RESTRICTIONS FOR OTHER THAN MAIN TRACKS With caution
Not exceeding
MPH

Through sidings, yard and other tracks, wyes, balloon tracks, crossovers and turnouts 10
 Tempe, old Creamery Branch spur 10

SPMW 7140 must not be operated east of MP 972.37, Hayden Branch.
 Refer to Miscellaneous Item 17, Page 18, All Subdivisions.

SPEED RESTRICTIONS FOR TRAINS: Maximum speed of trains in territory shown below is subject to further restrictions applicable to engines in the train as shown in **SPEED RESTRICTIONS FOR ENGINES** appearing on pages 14, 15 and 16 and **MAXIMUM SPEED PERMITTED WITH CERTAIN EQUIPMENT**, appearing on page 18 of Timetable for All Subdivisions. Speed must be further reduced as prescribed by speed signs, except as specifically authorized by Special Instructions herein, or by timetable bulletin.

SPEED RESTRICTIONS FOR TRAINS—Continued

EASTWARD			PSGR TRAINS	FRT	WESTWARD			PSGR TRAINS	FRT		
MP	MP	Column:	1	2	MP	MP	Column:	1	2		
WELLTON to PICACHO:					PICACHO to WELLTON:						
770.65 to 770.72 (Thru crossover)					25	25	Thru crossover				
770.72 to 770.84 Jet. switch					50	40	979.75 (936.69) to 979.32				
770.84 to 776.00					60	40	979.32 to 924.20				
776.00 to 778.20					55	40	924.20 to 922.04				
778.20 to 845.80					60	40	922.04 to 920.84				
845.80 to 848.00					50	40	920.84 to 916.48				
848.00 to 889.30					60	40	916.48 to 915.32				
889.30 to 894.50					50	40	915.32 to 913.77				
894.50 to 903.00					50	30	913.77 to 912.75				
903.00 to 904.77					30	30	912.75 to 910.15				
904.77 to 907.91 except thru spring switch					20	20	910.15 to 907.91				
MP 905.6 to depot					15	15	907.91 to 904.77 except thru spring switch				
907.91 to 910.15					30	30	MP 905.6 to depot				
910.15 to 912.75					60	30	904.77 to 903.00				
912.75 to 913.77					40	30	903.00 to 894.50				
913.77 to 915.32					20	20	894.50 to 889.30				
915.32 to 916.48					30	20	889.30 to 848.00				
916.48 to 920.84					60	40	848.00 to 845.80				
920.84 to 922.04					25	25	845.80 to 778.20				
922.04 to 924.20					50	40	778.20 to 776.00				
924.20 to 979.32					60	40	776.00 to 770.84				
979.32 to 979.75 (936.69) except thru crossover					25	25	770.84 to 770.72 except Jet. switch				
979.75 to 984.26					25	25	thru crossover to Track No. 2				
LITCHFIELD JCT. to LITCHFIELD PARK:					LITCHFIELD PARK to LITCHFIELD JCT.:						
889.30 to 894.26					20		894.26 to 889.30				
MAGMA TO HAYDEN:					HAYDEN TO MAGMA:						
949.44 to 958.75					20		1003.25 to 998.90				
958.75 to 963.40					30		998.90 to 989.70				
963.40 to 964.60					25		989.70 to 987.90				
964.60 to 970.60					30		987.90 to 984.80				
970.60 to 984.60					20		984.80 to 984.60				
984.60 to 984.80					10		984.60 to 970.60				
984.80 to 987.90					20		970.60 to 964.60				
987.90 to 989.70					25		964.60 to 963.40				
989.70 to 998.90					30		963.40 to 958.75				
998.90 to 1003.25					20		958.75 to 949.44				
MCQUEEN to DOCK:					DOCK to MCQUEEN:						
923.74 to 944.00					25		944.00 to 923.74				
TEMPE to WEST CHANDLER:					WEST CHANDLER to TEMPE:						
915.25 to 923.13					20		923.13 to 915.25				

Trains handling tank cars containing Flammable Compressed Gas must not exceed 55 MPH. Where maximum authorized speed is less than 55 MPH and more than 25 MPH, train must be operated at 5 MPH less than maximum authorized speed and must not exceed 30 MPH at the following locations:

Buckeye	Between MP 875 and MP 876
Litchfield and Cashion	Between MP 889 and MP 894.3
Gilbert	Between MP 926.5 and MP 927.5
Coolidge	Between MP 961.5 and 962.5

SPECIAL INSTRUCTIONS—LORDSBURG SUBDIVISION

RULE P. LOCATION OF OVERHEAD AND SIDE STRUCTURES NOT STANDARD CLEARANCE ON MAIN TRACK AND SIDINGS

MP	Location	Description
1032.50	Benson ... San Pedro River bridge	Side
1148.30	Lordsburg East end No. 4 track	Side
Clifton Branch		
1205.10	Gila River bridge	Overhead and Side
1215.89	Clifton ... San Francisco River bridge	Overhead and Side
Douglas Branch		
1089.00	Crook Tunnel	Overhead and Side
Ft. Huachuca Branch		
1059.00	Lewis Springs.. Bridge over San Pedro River	Overhead and Side

RULE 7-B. Red **CONDITIONAL STOP** signs and yellow **PROCEED PREPARED TO STOP** signs will be placed to left of track in direction of approach on No. 1 Track and No. 2 Track between PFE Yard, MP 987.76 and MP 1000.22 west of Vail.

RULE 7-C. PFE Yard: Freight trains arriving or departing PFE Yard must receive proceed signal (green flag by day, green light by night) or oral authorization from yardmaster or his representative.

RULE 10-J. Speed signs to left of track:

Eastward	Reading	Westward	Reading
MP 987.75	55	MP 989.75	35
MP 990.25	70-60		
MP 1279.2	40	MP 990.25	Diverging Route
			15
		MP 992.25	50
		MP 1000.0	70-60

RULES 30 and 31. Curtiss: Whistle signal must be sounded and bell kept ringing approaching and over all crossings Apache Powder Co. tracks.

RULE 81. Globe Branch: No. 2 track Globe Yard will be used as main track.

RULE 82-A. Crews ordered for trains at El Paso (Union Depot) will obtain clearance and train orders, if any, from pneumatic tube receptacle installed in Trainmen's Register Room, El Paso Union Depot.

When interlocking signal Tower 47 displays proceed indication for movement to eastward main track, such indication will authorize engines to move from Tower 47 to Alfalfa unit, El Paso Yard.

RULE 83-A. At following stations only trains indicated will register:

Tucson	} Trains originating or terminating.
PFE Yard	
Benson	Trains to and from Douglas Branch. Train register is located in box affixed to pole approximately 300 feet east of San Pedro Street crossing, between House tracks Nos. 1 and 2.

RULE 83-B. At open train order offices, trains may register by ticket as follows:

El Paso (Tower 196), Trains originating or terminating Alfalfa or Cotton Avenue units.

Trains originating or terminating El Paso (Union Depot) will register by ticket, placing ticket in pneumatic tube receptacle located in Trainmen's Register Room.

Conductors of trains originating Alfalfa or Cotton Avenue units, El Paso Yard, must show on margin of train register ticket thrown off at Tower 196 time watch was compared with standard clock, and operator at Tower 196 will enter this information on train register.

RULE 93. Yard limits are established at the following locations:

West MP		East MP
977.96	Tucson (No. 2 Track)	993.00
	Tucson (No. 1 Track)	992.09
	Benson (Douglas Br.)	1034.00
1058.30	Lewis Springs	Ft. Huachuca-End of Track
1084.27	Bisbee Jct.	1085.78
	Bisbee Jct. (Don Luis Branch)	End of track
	Bisbee Jct. (Bisbee Branch)	End of track
1102.94	Douglas	1109.06
	Bowie (Globe Br.)	1099.50
1218.70	Globe-Miami	1232.98
1146.60	Lordsburg	1149.77
	Lordsburg (Clifton Br.)	1148.52
1319.87	El Paso (No. 2 Track)	
1291.54	El Paso (No. 1 Track)	
	El Paso (Carrizozo Subdivision)	1300.54
	El Paso (T&L tracks)	820.00

El Paso: First-class trains enter and leave El Paso Union Depot on yard track within interlocking limits of Tower 196.

Semi-automatic signal on No. 2 Track west of Icehouse crossover will display yellow aspect when switch to crossover from No. 2 Track to San Antonio Division is lined and Signal 8314 at east end of crossover displays Stop indication.

RULE D-97. Will apply as follows:

On No. 1 track and on No. 2 track between PFE Yard and Mescal. Proceed indication in westward "SA" signals at west end Mescal will authorize movement on No. 1 track.

Between Anapra and Tower 47.

RULE 99-C. Will apply as follows:

On Douglas, Globe and Clifton Branches.

RULE 103. Lordsburg: Through freight trains arriving Lordsburg will stop for crew change before blocking crossing east of depot. Trains doing switching will avoid blocking this crossing except when absolutely necessary.

Deming: Ruby Street crossing must not be blocked other than for trains moving over crossing.

A flagman must precede all movements over:

Miami..... Crossing over U.S. Highway 60-70 at MP 1232.61 near end of Globe Branch.

Bowie..... STOP SIGN on east and west side of road crossing north side of station track. Trains and engines must stop and not enter crossing until it is known that automatic crossing gates are down.

Clifton Crossing at MP 1216.2 is equipped with Stop Signs and Crossing Signals 12162 and 12162A are equipped with unit for display of flashing white lights.

Display of flashing white lights indicates gates are down. Trains or engines approaching must not enter crossing until flashing white lights are displayed or it is known Crossing Signals are actuated and gates are down.

It is necessary to use S.P. switch key to operate or restart Crossing Signals. Insert switch key in either of the KEY RELEASE boxes and turn SLOWLY one complete turn to the right. For EASTWARD movement key release box is on post located on NORTH side of track. For WESTWARD movement key release box is on case on SOUTH side of track.

Deming Sage spur crossing Highway 80.

RULE 104. Derails in main track:

Ft. Huachuca .378 feet west of west wye track switch.
Lewis Springs. On Ft. Huachuca Br., 237 feet east of junction switch.

Galena West end Interchange Track for Interchange Track.

Globe at MP 1221.4

Miami MP 1230.59

MP 1231.71

MP 1232.03

Mescal: Derails installed 235 feet east of west switch and 350 feet west of east switch. Before siding is used train dispatcher's permission must be obtained, derail lined by hand, then train dispatcher can clear eastward or westward signal to enter siding.

The normal position of rigid switches at end of double track and junctions is as follows:

Lewis Springs.Ft. Huachuca Br., for Douglas line.

Bisbee Jct. . . Main track switches at east and west ends of yard must be left lined for main track.

Bisbee Jct. . . Bisbee Br., for Douglas line.

Bisbee Jct. . . End of west leg of wye must be left lined for west leg of wye.

Corta Bisbee Br., for Bisbee Branch.

Douglas FCP RR, for SP yard track.

RULE D-151. Westward trains will use No. 1 track Mescal to PFE Yard.

Eastward trains will use No. 2 track PFE Yard to Mescal. Double track rules apply.

Between Anapra and Icehouse Crossover MP 1320.90, the two main tracks are designated as follows—

No. 1 Track, current of traffic westward.

No. 2 Track, current of traffic eastward.

Between Icehouse Crossover, MP 1320.90, and El Paso (Union Depot), three main tracks are designated as follows:

North Track . . . No. 1 Track, current of traffic westward;

Middle Track . . No. 2 Track, current of traffic eastward;

South Track . . . No. 3 Track, current of traffic eastward.

Between El Paso (Union Depot) and El Paso (Cotton Avenue), the two main tracks are designated as follows:

No. 1 Track, current of traffic westward.

No. 2 Track, current of traffic eastward.

Eastward trains may use No. 2 Track or No. 3 Track between Icehouse Crossover and El Paso (Union Depot), being governed by block signal indication.

RULE 221. Tucson, PFE Yard, Bowie, Lordsburg and Deming are train-order offices only for trains originating except:

No. 1 and No. 2 must obtain clearance OK'd by Chief Train Dispatcher at Lordsburg.

RULE D-251. Will apply as follows:

On No. 2 track from MP 987.76, PFE Yard, to beginning of CTC, MP 1023, west end Mescal.

On No. 1 track from end of CTC, MP 1023, west end Mescal, to PFE Yard, MP 987.76.

On No. 1 and No. 2 Tracks between Anapra and Icehouse Crossover; on No. 1, No. 2 and No. 3 Tracks between Icehouse Crossover and El Paso (Union Depot); on No. 1 and No. 2 Tracks between El Paso (Union Depot) and El Paso (Cotton Avenue); on both main tracks between Tower 47 and Alfalfa unit, El Paso Yard.

RULE 306. The following home signals equipped with triangular plate bearing the letter "P" have included in their control limits some special protective device. Interlocking signals are listed as "P-I," Absolute signals are listed as "P-A" or "P-SA."

Eastward Signals	Protection	Westward Signals
P-I Westward Main Track Tucson	} Spring switch, west end of crossover, westward main track to eastward main track, Cherry Avenue	
P-I Eastward Main Track Tucson		} Spring switch, west end of crossover from eastward main track to Nogales lead, Cherry Avenue
P-I Nogales Lead Tucson	} Spring switch, west end of west lead, Cherry Avenue. Spring switch, east end of double track, Cherry Ave.	
		} Spring switch east end of crossover from westward main track to eastward main track Cherry Avenue
	East end of crossover from eastward main track to east lead P-SA East lead	
P-SA	Spring switch, end double track, PFE Yard, MP 987.7	
P-10140	Collision detector, underpass, MP 1014.00	
P-A	East end Fenner High water detector, Bridge 1037.44 P-10379	
P-A	Spring switch, west end north siding Mescal	
P-A	Collision detector, Luzena underpass, MP 1091.04 P-A	
P-10572	High water detector, Bridge 1057.85 P-10601	
P-10600	High water detector, Culvert 1060.54 P-10625	
P-10862	High water detector, Bridge 1086.93 P-10883	
P-A, West end Olga	} High water detector, Bridge P-A, East end 1106.32, main track and siding/Olga	
P-A East end San Simon		} High water detector, Bridge 1115.34 . P-11157
P-11202	} High water detectors, Bridges 1121.40 and 1121.49 { P-A West end Vanar	
P-A, East end Vanar		} High water detector, Bridge 1123.30 . . P-11243
P-11650	} High water detector, Bridge 1166.20 { P-A West end Separ	
P-11694		} High water detector, Bridge 1170.64 P-11721 High water detector, Bridge 1170.76
P-A East end Tunis	} High water detector, Bridge 1199.02 . . P-12005	
P-12112		} High water detector, Bridge 1211.92 { P-12131 High water detector, Bridge 1212.92 {

SPECIAL INSTRUCTIONS—LORDSBURG SUBDIVISION

Eastward Signals	Protection	Westward Signals
P-12132	{ High water detector, Bridge 1213.17 } { High water detector, Bridge 1213.58 }	P-12151
P-12152	{ High water detector, Bridge 1215.96 } { High water detector, Bridge 1216.11 }	P-12173
P-12172	High water detector, Bridge 1218.11	{ P-A West end } Carne
P-A West end } Carne	High water detector, Bridge 1219.02	{ P-A East end } Carne
P-12314	High water detector, Bridge 1233.56	P-12337
P-12430	High water detector, Culvert 1244.68	P-12455
P-13198	Fire protection Rio Grande bridge	

AUTOMATIC BLOCK SIGNAL SYSTEM

RULE 505. Tucson: Trains moving on main track in either direction will move between MP 987.7 at 36th St. and MP 985.48 at Cherry Ave. by block signals whose indications will supersede the superiority of trains.

Lordsburg: Trains moving on main track, in either direction, will move between end of CTC, at west switch yard track No. 1, and end of CTC, at east switch yard track No. 1, by block signals whose indications will supersede the superiority of trains.

SPRING SWITCHES

RULE 538. Spring switches equipped with facing point locks are located as follows:

Station	Location	Normal Pos.
PFE Yard	End double track, MP 985.48	Westward track
PFE Yard	End double track, MP 987.7	No. 2 track
*Wilmot	East end, Eastward siding	No. 2 track

*Equipped with switch-point indicator.

Spring switches not equipped with facing point locks are located as follows:

Location	Protection	Normal Pos.
Tucson	Spring switch, west end of crossover, westward main track to eastward main track, Cherry Avenue	{ Westward } Main Track
Tucson	Spring switch, west end of crossover from eastward main track to Nogales lead, Cherry Avenue	{ Eastward } Main Track
Tucson	Spring switch, west end of west lead, Cherry Avenue	East Lead
Tucson	Spring switch, east end of double track, Cherry Avenue	Main Track
Tucson	Spring switch, east end of crossover from westward main track to eastward main track, Cherry Avenue	Crossover
Tucson	East end of crossover from eastward main track to east lead	East Lead
Mescal	West end, north siding	No. 1 track

INTERLOCKING

RULE 605. Tucson: Limits extend on westward main track from eastward interlocking signal MP 985.15 to westward interlocking signal end of double track MP 985.50. On eastward main track from eastward interlocking signal MP 985.15 to westward interlocking signal end of double track MP 985.50, and from eastward interlocking signal MP 985.2 on Nogales lead to westward interlocking signal MP 985.4 and to westward interlocking signal on west lead MP 985.36.

Signals are under the control of Operator at PFE Yard.

LETTER-TYPE INDICATORS

RULE 705. Indicators located as follows:

Illum. Letter	On Signal	Approach- ing	Authorizes and Requires Movement as Follows
S	12060	Deming	Train to enter station track at west switch, MP 1207.2.

Refer to Rule 705, All Subdivisions.

CENTRALIZED TRAFFIC CONTROL

RULE 760. PFE Yard: Limits extend from MP 987.7 to East end PFE Yard, MP 987.92.

Mescal-Anapra: Limits extend from west switches of controlled siding Mescal, MP 1023.00, to west switch of No. 1 yard track, Lordsburg, MP 1146.6; and from fouling point at east end No. 1 yard track, Lordsburg, MP 1149.77, to clear point on North main track at Anapra, MP 1290.

Deming: Portion of old siding west of MP 1208.17 is a station track, capacity 5000 feet. This track must be kept clear of cars and may be used for meeting or passing trains when directed by train dispatcher. Permission must be obtained from train dispatcher before using this track for switching movements.

GENERAL REGULATIONS

RULE 825. Instructions for applying hand brakes:

Tucson: Passenger trains—To prevent uncontrolled movement, rail skid must be placed under west end of train and a sufficient number of hand brakes must be applied, but not less than two hand brakes on west end and two hand brakes on east end, unless outbound crew takes charge and engine remains attached.

TUCSON AND PFE YARD:

Freight trains, 1 to 10 cars	.. All hand brakes.
Freight trains, 11 to 20 cars	.. Ten hand brakes west end.
Freight trains, 21 to 49 cars	{ Ten hand brakes west end, } Five hand brakes east end.
Freight trains, 50 cars or more	{ 15 hand brakes west end, } 10 hand brakes east end.

Hand brakes will not be applied if outgoing crew takes charge of train on arrival, and inbound crew is advised by yardmaster that engine is not to be detached and no switching is to be performed on the train. Hand brakes will not be applied if switch crew takes charge of train on arrival.

Hand brakes on outbound trains must not be released until engine is coupled to train, air test completed, and blue sign removed.

Portable rail skids are hung on posts at the following locations:

Mescal Both ends of siding.
Dragoon Ore Spur.
Deming West end of Murray Lane.
Corta West end of siding.
Miami MP 1231.71

Deming: Trains setting out tank cars containing flammable compressed gas must secure car with hand brake and rail skids.

Refer to Rule 825 All Subdivisions.

RULE 827.

Dragging and/or derailed equipment detectors and indicators installed at the following locations:

MP	Location
991.5 (No. 1 Track)	Between 36th St., PFE Yard and Wilmot
991.5 (No. 2 Track)	Between 36th St., PFE Yard and Wilmot
998.8 (No. 1 Track)	Between Wilmot and Vail
1013.0 (No. 1 Track)	Marsh
1017.5 (No. 2 Track)	Between Pantano and Mescal
1025.9	Between Mescal and Chamiso
1029.8	Between Mescal and Chamiso
1035.9	Between switches main track, Fenner
1039.5	Between Fenner and Sibyl
1044.0	Between Sibyl and Tully
1050.3	Between Tully and Dragon
1059.3	Between Dragon and Cochise
*1069.3	Between Cochise and Willcox
1077.9	Between Willcox and Raso
1086.1	Between Raso and Luzena
1094.0	Between Luzena and Bowie
1101.3	Between Bowie and Olga
1110.0	Between Olga and San Simon
1118.0	Between San Simon and Vanar
1125.8	Between Vanar and Steins
1130.5	Between Steins and Mondel
1136.9	Between Mondel and Gary
1144.9	Between Gary and Lordsburg
1156.2	Between Ulmoris and Lisbon
1163.12	Between Lisbon and Separ
1174.25	Between Separ and Wilna
1183.4	Between Wilna and Gage
1192.2	Between Gage and Tunis
1202.3	Between Tunis and Deming
1213.1	Between Deming and Carne
1233.5	Between Akela and Dona
1243.0	Between Dona and Aden
1255.1	Between Aden and Afton
1264.0	Between Afton and Lanark
1273.0	Between Lanark and Strauss
1282.2	Between Strauss and Lizard
1288.7	Between Lizard and Anapra
1288.9	Anapra

*Revolving red beacon mounted on Hot Box Detector house.

HOT BOX DETECTORS

Illum. Letter	On Signal	Approaching	Location of Readout
H	12215	Carne	Westward Absolute Signal W.E. Carne
W	12234	Akela	
W	12251	Carne	
H	12268	Akela	Eastward Absolute Signal E.E. Akela

SCANNER SITES

MP	Type	Direction	Location
991.5	D	West	*Wilmot
1016.4	C	West	Marsh-Mescal
1038.1	C	East and West	Fenner-Sibyl
1069.3	C	East and West	Cochise-Willcox
1102.6	C	East and West	Bowie-Olga
1126.2	C	East and West	Vanar
1152.0	C	East and West	Ulmoris
1181.2	C	East and West	Wilna-Gage
1224.2	A	East and West	Carne-Akela
1252.0	C	East and West	Aden-Afton
1289.3	D	East	**Lizard-Anapra
1289.3	C	East and West	Lizard-Anapra

*Readout at PFE Yard.

**Readout at El Paso Yard.

RULE 872. Enginemen taking charge of engines at El Paso, Lordsburg, Tucson, and PFE Yard will consider engines as having been amply supplied with water, fuel, sand and other supplies.

Lordsburg: Inbound rolling inspection of all freight trains will be made by the outbound crew.

Refer to Rule 827, All Subdivisions.

AIR BRAKE RULES

RULE 2. Taking Charge of Engines.

Section A, will apply at:

El Paso, Lordsburg, Douglas and PFE Yard.

RULE 17. Retaining valves must be used on freight and mixed trains on descending grades as follows:

Pinal to Burch, Pinal to Cutter, between Clifton and Guthrie, Galena to Corta, Don Luis Branch, Bisbee to Bisbee Jct., Ft. Huachuca to Lewis Springs.

Without dynamic brake in operation: One retaining valve for each 80 tons in train. If gross tonnage exceeds 80 tons per operative brake, retaining valves must be used on all cars and speed must not exceed 15 MPH.

With dynamic brake in operation:

PERMISSIBLE TONS PER UNIT WITHOUT RETAINING VALVES

	Basic Dynamic Brake		Extended Range Dynamic Brake		
	4 Axle	6 Axle	4 Axle	6 Axle	8 Axle
With dynamic brake in operation but without pressure maintaining system of braking	600	900	725	1075	1450
With dynamic brake in operation and with pressure maintaining system of braking	1500	2250	1800	2700	3600

If permissible tonnage is exceeded, one retaining valve must be used for each 150 tons in excess thereof.

Refer to Rule 17, All Subdivisions.

RULE 21. Refer to All Subdivisions.

RULE 24. Will apply at PFE Yard, Tucson, and El Paso.

RULE 24-E. Will apply at PFE Yard and Tucson.

RULE 24-F. Will apply as follows:

Bisbee Branch, Don Luis Branch, Fort Huachuca Branch, on all tracks at Curtiss Powder Plant, Paul's Spur at Forrest and on unloading trestle at P.D. Smelter at Calumet.

Tucson: When making movements either direction between PFE Yard and areas outside PFE Yard but within yard limits. Responsibility to know that above has been done rests upon yard engineer and yard foreman. Carman on duty at Tucson PFE Yard will couple air hose and make test as prescribed by Air Brake Rule 24-F.

RULE 24-G. Will apply at: Lordsburg.

RULE 25. Will apply as follows:

Fort Huachuca.....Westward trains.

AIR BRAKE RULE 26. Before descending grades specified below with a freight train when the temperature is 32° F. above zero or less, and at other times that may be designated by the proper authority, the brake pipe hose must be blown out on the head end of train in the manner prescribed in last paragraph of Air Brake Rule 26:

South Siding	East and West
Bisbee	West
Ft. Huachuca-Garden Canon	West

SPECIAL INSTRUCTIONS—LORDSBURG SUBDIVISION

RULE 33. Pinal to Burch, Pinal to Cutter, between South Siding and Guthrie, South Siding and Clifton, Don Luis Branch, Bisbee to Bisbee Jct. and Ft. Huachuca to Lewis Springs:

Maximum tonnage per operative brake..... 80 tons except with dynamic brake and pressure maintaining system of braking in operation with not more than 15 cars for each four axles of dynamic brake; with speed not exceeding 15 MPH and with all retaining valves on loaded cars in high pressure position... 140½ tons

Should dynamic brake failure occur while handling in excess of 80 tons per operative brake train may proceed at speed not exceeding 15 MPH if in judgment of conductor and engineer it is safe to do so, and provided retaining valves are used as prescribed by Air Brake Rule 17.

Restrictive grades are as follows:

WESTWARD STATION MP	TO	STATION MP	MAXIMUM SPEED
Fairbank.....	to	Benson	
1046.4.....	to	1032.7.....	25
Ft. Huachuca.....	to	Lewis Springs	
1070.8.....	to	1058.8.....	20
Miami.....	to	Bowie	
Globe.....	to	San Carlos	
1217.52.....	to	1213.5.....	20

Descending grades of 1.4 percent or over are as follows:

Eastbound:

MP 1023.69 (Mescal) to MP 1033.6 (Benson)
MP 1128.93 (Steins) to MP 1132

Westbound:

MP 1128.93 (Steins) to MP 1121.8 (Vanar)
MP 1041.32 (Sibyl) to MP 1033.6 (Benson)

MISCELLANEOUS

1. Engines listed must not operate on tracks shown below:

Class of Engine	Restricted Tracks
All engines except ES406-1, AS409-4, AS410-1, only.....	Calumet..... Trestle to ore bins at Smelter.
All engines except a single four-axle unit.....	Curtis..... All tracks beyond clear point of main track switch (MP 1039.52) Apache Powder Co.
All engines except a single four-axle unit.....	Don Luis Branch..... All tracks
All engines.....	Don Luis..... White Tail Deer spur, beyond impaired clearance sign.
All engines except a single four-axle unit.....	Bisbee Branch..... All tracks
All engines.....	Lowell..... Trestle 1091.38 on approach to ore bin, Shattuck Denn mine.

AS600 series	
FP600 series	
EF600 series	
ES600 series	
GF600 series	
EP600 series	
EF850-B	
GF850.....	Clifton Branch... Must not be operated east of Fox.

2. PFE Yard: Look out for ice and material alongside PFE Co. tracks.

3. Douglas Branch: Crook Tunnel (MP 1089) look out for fallen rocks at east and west ends of tunnel.

4. Bisbee Branch: Campbell shaft track and Denn spur track at Lowell must not be used beyond points indicated by signs: "Limit of Southern Pacific switching operations."

5. Calumet: On Phelps-Dodge track No. 5 in smelter plant at Calumet the "Impaired Clearance" sign located in advance of trackage operated by Phelps-Dodge electric locomotives refers to side clearance of signal lights and 400 volt electric trolley overhead wire.

Before entering this area crews must stop at Phelps Dodge scale house and receive assurance from scale house foreman that electric power is off. In addition it must be known that cars and engines will clear.

Switching service on Phelps-Dodge track No. 5 must be done during daylight hours only.

6. Willcox: Do not leave cars spotted on house track or Standard Oil spur within 600 feet east of west house track switch.

7. Paul Spur: Paul Lime Plant. Gate is located on east end of first building approximately 500 feet west of the derail.

Prior to any switching movement into Paul Lime Plant, gate must be secured with latch in open position and red light located on wall of building must be illuminated. If red light does not illuminate after securing gate in open position, switching movement must not be made into plant beyond the gate until member of crew has contacted supervisor in charge of Paul Lime Plant, who must assure SP crew members that it is safe to make the switching movement.

After switching movement is complete, gate must be closed.

Engine bell must be rung at all times during switching movement within Paul Lime Plant.

8. LOAD LIMIT (car and contents):

Tucson-El Paso, except..... 263,000 pounds

Gross weight of 263,000 pounds or less applies to uniformly loaded four-axle cars having trucks spaced 23 feet 0 inches or more center to center and minimum axle spacing of 5 feet 6 inches.

Gross weight uniformly loaded four-axle cars with minimum axle spacing of 6 ft. 0 in. and minimum distance of 37 feet, 0 inches center to center of trucks; also, wheels 38 in. or more in diameter..... 315,000 pounds

Ore cars SP 333500 to 334399..... 281,000 pounds

Ore cars SP 341000 to 341355 and

ATSF 64000 to 64099..... 281,000 pounds

Sulphuric acid tank cars..... 281,000 pounds

Hopper cars SP 464000 series..... 281,000 pounds

Bowie-Miami, except..... 281,000 pounds

Air dump cars SPMW 6400-6439..... 263,000 pounds

Lordsburg-Clifton

Cars having truck centers:

24 ft. 0 in. and less..... 240,000 pounds

Over 24 ft. 0 in. to 30 ft. 0 in..... 263,000 pounds

Over 30 ft. 0 in..... 281,000 pounds

Benson-Douglas

Cars having truck centers 30 ft. 0 in. or more..... 281,000 pounds

Cars having truck centers less than 30 ft. 0 in..... 240,000 pounds

Hopper cars SP 464000 series..... 281,000 pounds

Ore cars SP 467500 to 467549 between

Bisbee Jct. and Douglas..... 281,000 pounds

Lewis Springs-Ft. Huachuca..... 240,000 pounds

Corta-Galena, except:..... 240,000 pounds

Ore cars SP 467500-467549..... 281,000 pounds

Bisbee Jct.-Bisbee, except:..... 240,000 pounds

Ore cars SP 467500-467549..... 281,000 pounds

Unless authorized by Superintendent, heavier loads must not be handled.

9. SPEED RESTRICTIONS

FOR OTHER THAN MAIN TRACKS

Centralized Traffic Controlled sidings and

turnouts..... 25

Except:

Mescal (Through siding)..... 15

Through other sidings, yard and other tracks, wyes, balloon tracks, crossovers, turnouts and

over slip switches..... 10

With Caution
Not Exceeding
MPH

SPEED RESTRICTIONS FOR OTHER THAN MAIN TRACKS

With Caution Not Exceeding MPH

Except:

Lordsburg (Through No. 1 track)	25
Willcox: On all tracks and turnouts serving lettuce packing sheds	5
Benson: On south house track	5
Through west turnout MP 1320.90 and east turnout MP 1293.98 Icehouse crossovers	30
Curtis: On all tracks beyond clear point of main track switch (MP 1039.52) Apache Powder Co.	5
Cochise (MP 1061.66), Arizona Electric Power Coop. Inc.:	
Maximum speed	20
All movements within plant must not exceed 5 MPH and with bell ringing.	

SPEED RESTRICTIONS FOR TRAINS: Maximum speed of trains in territory shown below is subject to further restrictions applicable to engines in the train as shown in SPEED RESTRICTIONS FOR ENGINES appearing on pages 14, 15 and 16 and MAXIMUM SPEED PERMITTED WITH CERTAIN EQUIPMENT, appearing on page 18 of Timetable for All Subdivisions. Speed must be further reduced as prescribed by speed signs, except as specifically authorized by Special Instructions herein, or by timetable bulletin.

EASTWARD			PSGR TRAINS	FRT	WESTWARD			PSGR TRAINS	FRT
MP	MP	Column:	1	2	MP	MP	Column:	1	2
TUCSON, AGAINST CURRENT OF TRAFFIC ON NO. 1 TRACK:					ALFALFA UNIT to EL PASO COTTON AVE. NO. 1 TRACK:				
987.75 to 988.40 ..			35	35	820.00 to 825.00 ..			30	30
988.40 to 990.25 ..			49	49	825.00 to 826.90 ..			20	20
990.25 to 1021.29 ..			59	49	826.90 to 827.71				
1021 to 1021.74					(1297.60)			15	15
(Mescal			35	35	EL PASO, AGAINST CURRENT OF TRAFFIC ON NO. 2 TRACK:				
Spring Switch)					1295.40 to 1293.54			25	25
TUCSON to EL PASO:					(1320.90)			25	25
982.73 to 985.19 ..			35	35	1320.90 to 1317.70 ..			25	25
985.19 to 985.27 ..			25	25	EL PASO to TUCSON:				
985.27 to 988.40 ..			35	35	1297.76 to 1295.40				
988.40 to 990.25					except			15	15
(No. 2 Track) ..			55	55	via slip switch				
990.25 to 1003.88 ..			70	55	opposite Tower			10	10
1003.88 to 1010.36 ..			25	25	47			40	40
1010.36 to 1012.48 ..			40	30	1295.40 to 1281.20 ..			40	40
1012.48 to 1014.00 ..			30	30	1281.20 to 1279.70 ..			50	50
1014.00 to 1016.77 ..			40	30	1279.70 to 1128.68 ..			70	55
1016.77 to 1018.08 ..			30	30	1128.68 to 1124.40 ..			40	40
1018.08 to 1023.10 ..			40	40	1124.40 to 1121.40 ..			50	50
1023.10 to 1031.60 ..			55	55	1121.40 to 1078.00 ..			70	55
1031.60 to 1036.79 ..			60	55	1078.00 to 1074.00 ..			60	55
1036.79 to 1052.43 ..			40	40	1074.00 to 1058.00 ..			70	55
1052.43 to 1058.00 ..			60	55	1058.00 to 1052.43 ..			60	55
1058.00 to 1074.00 ..			70	50	1052.43 to 1036.79 ..			40	40
1074.00 to 1078.00 ..			60	55	1036.79 to 1031.60 ..			60	55
1078.00 to 1121.40 ..			70	55	1031.60 to 1023.10				
1121.40 to 1124.40 ..			50	50	(1021.74) Mescal			55	55
1124.40 to 1128.68 ..			40	40	1021.74 to 1021.29 ..			40	40
1128.68 to 1279.70 ..			70	55	1021.29 to 1008.40 ..			65	50
1279.70 to 1281.20					1008.40 to 1007.45 ..			60	50
(No. 2 Track) ..			50	50	1007.45 to 990.25 ..			70	55
1281.20 to 1320.15 ..			40	40	990.25 to 988.40 ..			50	50
1320.15 to 1320.60					988.40 to 982.73 ..			35	35
(No. 2 Track) ..			30	30					

SPEED RESTRICTIONS FOR TRAINS—Continued

EASTWARD			PSGR TRAINS	FRT	WESTWARD			PSGR TRAINS	FRT
MP	MP	Column:	1	2	MP	MP	Column:	1	2
TUCSON to EL PASO:					MESCAL, AGAINST CURRENT OF TRAFFIC ON NO. 2 TRACK:				
1320.60 to 1320.90					1023.08 to 1003.88 ..			25	25
(West switch Icehouse Cross-over) (No. 2 Track)			30	30	1003.88 to 988.40 ..			49	49
1320.90 to 1322.28					988.40 to 987.75 ..			35	35
(No. 3 Track) ..			30	30					
1322.28 to 1322.87									
(No. 3 Track) ..			25	25					
1320.90 (1293.54) to 1295.40 (No. 2 Track)			30	30					
1295.40 to 1297.76 except			15	15					
via slip switch opposite Tower 47			10	10					
ANAPRA, AGAINST CURRENT OF TRAFFIC ON NO. 1 TRACK:									
1289.90 to 1295.40 ..			25	25					
EL PASO COTTON AVE. to ALFALFA UNIT, NO. 2 TRACK:									
(1297.60) 827.71 to 826.90			15	15					
826.90 to 825.00 ..			20	20					
825.00 to 820.00 ..			30	30					

Trains handling tank cars containing Flammable Compressed Gas must not exceed 55 MPH. Where maximum authorized speed is less than 55 MPH and more than 25 MPH, train must be operated at 5 MPH less than maximum authorized speed and are restricted as follows:

MPH	LOCATIONS
30	Benson—Between MP 1032 and MP 1033
30	Willcox—Between MP 1074 and MP 1075
30	Deming—Between MP 1207.5 and MP 1208.5
20	Anapra—Between MP 1289.9 and MP 830 (T.L.)
10	El Paso—Between MP 830 and Dallas St. Yard
25	El Paso—Between MP 827 and MP 823.1 (Texaco Crossover)

and must not exceed 30 MPH departing Lordsburg until caboose has passed depot.

Maximum authorized speed for freight trains is 55 MPH except BSMFF, APLAA, APLAB, and GSLAF are authorized to operate at Column One speeds provided train contains no restricted cars, or empties except cabooses, and does not exceed 80 tons per operative brake and/or 120 cars.

Trains BSMFY, LAEST, LAHOT, WCESP, PXESP, YUESP and NGESP are authorized to operate at Column One Speeds not exceeding 65 MPH provided they contain no restricted cars, or empties except cabooses, and do not exceed 80 tons per operative brake and/or 120 cars.

SPECIAL INSTRUCTIONS—LORDSBURG SUBDIVISION

Trains BSMFY and SCLAT with operative radio controlled remote locomotives may operate at Column One speeds not exceeding 65 MPH provided train contains no restricted cars, or empties except cabooses, and does not exceed 80 tons per operative brake and/or 150 cars.

Other freight trains may be authorized by train order to operate at Column One speeds not exceeding 65 MPH provided they contain no restricted cars, or empties except cabooses, and do not exceed 80 tons per operative brake and/or 120 cars.

Westbound freight trains arriving main track PFE Yard will reduce train speed to 10 MPH one train length before spotting for fuel to allow for train inspection.

At Lordsburg, outbound crew will make inbound rolling inspection of their train if on duty.

Freight trains authorized to operate at Column One Speeds, except BSMFF, APLAA, APLAB and GSLAF are further restricted as follows:

TUCSON EASTWARD AGAINST CURRENT OF TRAFFIC ON NO. 1 TRACK

MP	MP	MPH
988.40 to 1021.29		49

EASTWARD—RASO to LUSENA

MP	MP	MPH
1082.80 to 1091.00		60

Trains handling empty cars except cabooses must not exceed 55 MPH.

Maximum speed for freight trains without operative dynamic brakes on descending grades between Steins and Wilmot is 50 MPH.

SPEED RESTRICTIONS FOR TRAINS—Continued

EASTWARD		ALL TRAINS	WESTWARD		ALL TRAINS
MP	MP		MP	MP	
BOWIE to MIAMI:			MIAMI to BOWIE:		
1098.12 to 1184.56		25	1232.98 to 1231.00		10
1184.56 to 1184.73		10	1231.00 to 1222.57		20
1184.73 to 1207.40		25	1222.57 to 1220.47		10
1207.40 to 1216.00		35	1220.47 to 1217.50		25
1216.00 to 1217.50		30	1217.50 to 1216.00		30
1217.50 to 1220.47		25	1216.00 to 1207.40		35
1220.47 to 1222.57		10	1207.40 to 1184.73		25
1222.57 to 1231.00		20	1184.73 to 1184.56		10
1231.00 to 1232.98		10	1184.56 to 1098.12		25

SPEED RESTRICTIONS FOR TRAINS—Continued

EASTWARD		ALL TRAINS	WESTWARD		ALL TRAINS
MP	MP		MP	MP	
LORDSBURG to CLIFTON:			CLIFTON to LORDSBURG:		
1146.54 (1148.30) to 1147.16		10	1216.69 to 1203.80		10
1147.16 to 1149.33		20	1203.80 to 1198.80		20
1149.33 to 1157.28		30	1198.80 to 1197.40		10
1157.28 to 1160.75		20	1197.40 to 1183.15		20
1160.75 to 1171.00		30	1183.15 to 1171.00 except over structure 1181.39		40
1171.00 to 1183.15 except Over structure 1181.39		40	1171.00 to 1160.75		20
1183.15 to 1197.40		20	1160.75 to 1157.28		20
1197.40 to 1198.80		10	1157.28 to 1149.33		30
1198.80 to 1203.80		20	1149.33 to 1147.16		20
1203.80 to 1216.69		10	1147.16 to 1146.54 (1148.30)		10
BENSON to DOUGLAS:			DOUGLAS to BENSON:		
1032.60 to 1033.25		20	1107.96 to 1104.00		20
1033.25 to 1050.57 (1046.39)		25	1104.00 to 1076.40		25
1046.39 to 1053.49		40	1076.40 to 1067.00		40
1053.49 to 1053.80		25	1067.00 to 1060.00		25
1053.80 to 1060.00		40	1060.00 to 1053.80		40
1060.00 to 1067.00		25	1053.80 to 1053.49		25
1067.00 to 1076.40		40	1053.49 to 1046.39 (1050.57)		40
1076.40 to 1104.00		25	1050.57 to 1033.25		25
1104.00 to 1107.96		20	1033.25 to 1032.60		20
LEWIS SPRINGS to FT. HUACHUCA:			FT. HUACHUCA to LEWIS SPRINGS:		
1058.77 to 1067.89		20	1070.99 to 1067.89		10
1067.89 to 1070.99		10	1067.89 to 1058.77		20
BISBEE JCT. to BISBEE:		10	BISBEE to BISBEE JCT.:		10
CORTA to GALENA:...		10	GALENA to CORTA:...		10

Trains handling tank cars containing Flammable Compressed Gas must not exceed 55 MPH. Where maximum authorized speed is less than 55 MPH and more than 25 MPH, train must be operated at 5 MPH less than maximum authorized speed.

Trains handling empty cars except cabooses must not exceed 55 MPH.

GLOBE BRANCH: Between MP 1099.45 Bowie and MP 1200.40 San Carlos, trains handling empty ore cars SP 341000 to SP 341335 and ATSF 64000 to 64099 must not exceed 20 MPH.

When engines of the following classifications are operated on the Globe Branch, they must not exceed speeds shown between mile post locations as listed below where authorized maximum speeds as shown above are greater:

Class of Engines	MP 1227.39 to 1231.94
AS418, GF425	10

DON LUIS and BISBEE BRANCHES: AS418 class engines must not exceed 15 MPH.

REFER TO SPEED RESTRICTIONS FOR OTHER THAN MAIN TRACKS ON PAGE 34.

RULE 7-C. Freight trains must not enter receiving tracks unless proceed signal (green flag by day, green light by night), or on oral instructions from yardmaster or his representative.

RULE 93. Yard limits are established at the following locations:

West MP		East MP
1319.87	El Paso	
1291.54	El Paso (No. 1 Track)	
	El Paso (Carrizozo Subdivision)	1300.54
	El Paso (San Antonio Div.)	820.00
1301.50	Fort Bliss-Tobin	1308.00

RULE 98. Railroad crossings at grade not interlocked. Joint SP Santa Fe Levee Track crossing Santa Fe connection to International Bridge located 387 feet North of the center of the Santa Fe International Bridge. Stop signs are located on both sides of the Santa Fe connection to the International Bridge. Movements over this crossing may be made after stopping and flagman has preceded the movement.

RULE 103. Automatic crossing warning device on No. 3 track at Globe Mills is not connected with industry track. Flagman must precede all movements over:

- Globe Mill—Road crossing over industry track.
- Fort Bliss Drill—Airport Road.

Ashley: State Highway crossing on Fort Bliss spur. Approach circuits of automatic crossing warning device indicated on rail joints on each side of crossing. When these circuits are occupied and crossing is not entered within one minute signals cease to operate.

To operate or restart signals, insert switch key in either of the KEY RELEASE boxes located on each signal mast and turn SLOWLY one complete turn to right.

RULE 104. Split point derail in A, B, C and D units of El Paso yard are located on west end of tracks Nos. 17, 18, 29, 33, 34 and west end of lead opposite A-B yard unit.

RULE D-151. Between Ice House Crossover, MP 1320.90, and El Paso (Union Depot) the three main tracks are designated as follows:

- North track No. 1 Track, current of traffic westward;
- Middle track No. 2 Track, current of traffic eastward;
- South track No. 3 Track, current of traffic eastward.

Eastward trains may use No. 2 Track or No. 3 Track being governed by block signal indication.

RULE D-251. Will apply as follows:

On No. 1 and No. 2 Tracks between Anapra and Icehouse Crossover; on No. 1, No. 2 and No. 3 Tracks between Icehouse Crossover and El Paso (Union Depot); on No. 1 and No. 2 Tracks between El Paso (Union Depot) and El Paso (Cotton Avenue); on both main tracks between Tower 47 and Alfalfa unit, El Paso Yard.

RULE 306. The following block signals equipped with triangular plate bearing the letter "P" have included in their control limits some special protective device:

Eastward Signals	Signals	Westward Signals
P-8232	Barricade Detector for Dead End Streets	P-8231
P-13188 (No. 2 Track)	Slide Detector Fence MP 1319.42 to 1319.57	P-8233

AUTOMATIC BLOCK SIGNAL SYSTEM

RULE 505. Signals 8231 and 8233 located on signal bridge west end Alfalfa unit govern movements as follows:

- Signal 8231 governs movement on Westward Track.
- Signal 8233 governs movement from drill track to Westward Track.

Westward trains or engines stopped by Signal 8231 must actuate push button, wait 45 seconds and if signal does not display a proceed indication may proceed under the provisions of Rule 507.

Westward trains or engines leaving Alfalfa unit from drill track and stopped by Signal 8233, provided no westward movement is approaching on Westward Track, may actuate push button and, if after waiting 2 minutes and 50 seconds, signal does not display a proceed indication, may proceed under the provisions of Rule 507 after first complying with Rule 81-A.

Signal 8226 located west of facing point crossover from Eastward Track to Westward Track Alfalfa unit governs movements as follows:

- Top unit governs movement on Eastward Track;
- Bottom unit governs movement into yard.

When Signal 8226 displays stop indication an eastward train or engine to enter Alfalfa unit at this location, after stopping, may proceed at restricted speed if proceed signal received from yardman, green flag by day, green light by night or oral authorization from yardmaster or his representative which will indicate protection on Westward Track has been provided in the directions necessary to safeguard movement.

Signals 8223 and 8225 located on signal bridge Alfalfa unit (near Little Flower Road) govern movements as follows:

- Signal 8223 governs movement on Westward Track;
- Signal 8225 governs movement from yard to westward track and will not display any indication unless crossover is lined for movement from yard to westward track.

SPRING SWITCHES

RULE 538. Spring switches not equipped with facing point locks are located as follows:

Station	Location	Normal Position
Alfalfa Unit	West end of crossover from drill to Westward Track	Westward Track
*Tower 47 El Paso	{ No. 6 Lead to Tucumcari Connection	Tucumcari Conn.
*Tower 47 El Paso	{ West end Crossover 3 and 6 Diesel Shop Track	Track 3
*Tower 47 El Paso	{ East end Crossover 29 to 30 Track	Track 30

*Equipped with switch-point indicator.

INTERLOCKING

RULE 605. Ice House Crossover, MP 1320.90: Eastward SA signal governs movement as follows:

- Top unit To No. 3 Track;
- Bottom unit To No. 2 Track.

When signal displays stop indication a member of crew must call operator at Tower 196. Telephone located on instrument case.

El Paso (Union Depot) Tower 196: Limits on track Nos. 1 and 2 extend from eastward interlocking signals located opposite signal 8299 at MP 1295.40 to westward interlocking signals at MP 1297.07. Limits on track No. 3 extends between interlocking signal at MP 1296.25 east end Union Depot yard and interlocking signal at MP 1296.79 Campbell Street overpass.

Conductor, brakeman and/or engineer will inform tower operator when passenger trains are ready to leave.

SPECIAL INSTRUCTIONS—EL PASO TERMINAL

Tower 47: Limits on track Nos. 1 and 2 extend from eastward interlocking signals at MP 1297.07 east end of trainway to westward interlocking signals at MP 1298.22 just west of San Marcial Street and on the Carrizozo subdivision to absolute signal at MP 1297.82.

Tidwell Alley and Azar Nut: Limits extend from eastward interlocking signal at MP 1298.00 on MoPac Main to westward interlocking signals at MP 1298.16 on MoPac Main and River track. On Tidwell Alley track from eastward interlocking signals MP 1298.10 to westward interlocking signals MP 1298.14. On Azar Nut track from eastward interlocking signals MP 1298.07 to westward interlocking signals MP 1298.08.

MoPac Yard: Limits extend from eastward interlocking signals MP 1298.43 to westward interlocking signals MP 1298.49.

MoPac Main Lead & Hussman Spur: Limits extend from westward interlocking signal MP 1297.95 on MoPac Main to eastward interlocking signal MP 1297.98. On Hussman Spur from westward interlocking signal MP 1297.95 to eastward interlocking signal MP 1297.98.

Westward-three-unit signal at MP 1297.82 Carrizozo Subdivision governs movements as follows:

- Top unit Westward to No. 1 Track;
- Middle unit Eastward to No. 1 Track;
- Bottom unit To other diverging routes.

Eastward two-unit signal on East leg of wye at connection with No. 1 Track governs movement as follows:

- Top unit To No. 1 Track;
- Bottom unit Through crossover to No. 2 Track.

Westward three-unit signal on No. 1 Track at MP 1298.22 just west of San Marcial St., governs movements as follows:

- Top unit Westward on No. 1 Track;
- Middle unit To T and P connection;
- Bottom unit To other diverging routes.

Crank required to operate dual control switches and telephone for communication with operator located on instrument house just west of Piedras Street crossing.

Dwarf signal governing movements from Tracks 203 or 206 does not check position of inside switch 206, observance of points must be made to assure proper line-up for movement.

ABSOLUTE-PERMISSIVE BLOCK

RULE 740. Limits extend between MP 1297.82 (east limit Tower 47), El Paso, and MP 1302.2 (west end siding), Planeport.

RULE 741. When absolute signal at either end of A-PB displays stop indication, train or engine must obtain authority from operator at Tower 47 to proceed. If signal cannot be cleared and there is no opposing train or engine causing signal to display stop indication, operator Tower 47 may authorize train or engine to proceed on main track to limit of A-PB as prescribed by Rule 507.

Trains or engines must not enter main track or use main track switches within A-PB limits without first obtaining permission from operator Tower 47.

If, for any reason, proceed indication of absolute signal cannot be acted upon at once operator Tower 47 must be notified immediately.

Rule 744 will not apply within these limits.

GENERAL REGULATIONS

RULE 812. The El Paso Terminal is under the jurisdiction of the Superintendent of the Tucson Division.

RULE 825. Unless relieved of responsibility by yardmaster, crews of freight trains or transfer cuts arriving in a unit of El Paso Terminal with 15 or more cars will apply five hand brakes on west end and five hand brakes on east end.

Hand brakes on outbound trains must not be released until engine and caboose are coupled to train, and it is known that air is through train.

Sufficient hand brakes must be applied on all trains arriving Union Depot and not less than two hand brakes at any time on the east end of the train. Any employe releasing any of these brakes must first apply as many others to replace them.

Refer to Rule 825, All Subdivisions.

RULE 827. Alfalfa and Cotton Ave. Units, El Paso Yard: First two paragraphs will not apply to crews of westward freight trains while departing these units.

AIR BRAKE RULES

RULE 17. Refer to All Subdivisions.

RULE 21. Refer to All Subdivisions.

RULE 24. Will apply at El Paso.

RULE 24-F. Will apply as follows:

El Paso: Direct movements between:

Planeport and Cotton Avenue Yard,
Slag pit and Cotton Avenue Yard,
Chamizal Yard and Cotton Avenue Yard,
Cotton Avenue Yard and Alfalfa Yard,
Rod Mill Refinery and Alfalfa Yard,
Phelps Dodge Refinery and Alfalfa Yard,
Standard Oil Refinery and Alfalfa Yard,
Chevron Asphalt and Alfalfa Yard,
All tracks in Zone No. 10 and Alfalfa Yard, when there are no set-outs or pick-ups enroute. Responsibility to know that above has been done rests upon yard engineer and yard foreman. Carman on duty at El Paso, Cotton Avenue, or Alfalfa Yards, will couple air hose and make test as prescribed by Air Brake Rule 24-F.

MISCELLANEOUS

1. The main tracks between El Paso (Union Depot) and Tower 47 are designated:

- North track No. 1 Track;
- Middle track No. 2 Track;
- South track, between Union Depot and Campbell Street overpass No. 3 Track.

2. SPEED RESTRICTIONS ON MAIN TRACK	Not Exceeding MPH
Between west limits Tower 196, MP 829.90 and MP 826.90	15
Between MP 826.90 and MP 825.00	20
Between MP 825.00 and MP 820.00 MP 820.00	30
Between Dallas Street MP 827.71 and east limits Tower 47 (Carrizozo Subdivision), MP 1297.76	15
Except: Over slip switches, straight side	15
Over slip switches, turnout side	10

3. SPEED RESTRICTIONS ON OTHER THAN MAIN TRACK	With Caution Not Exceeding MPH
Through sidings, yard and other tracks, wyes, balloon tracks, crossovers and turnouts	10
On all tracks listed below:	
West turnout Ice House Crossover	30
East turnout Ice House Crossover	30
Industry tracks	5
Repair, store and material tracks, shop yard, Diesel service facility tracks	5

4. OPERATIONS OVER MISSOURI PACIFIC TRACKS

Movements over Missouri Pacific Tracks between Tower 47 and/or in Missouri Pacific Yard will be governed by Southern Pacific Rules except the following Missouri Pacific Rules will apply:

RESTRICTED SPEED—Proceed prepared to stop short of train, engine, obstruction, or switch not properly lined.

RULE 103(a). PRECAUTIONS IN SWITCHING—When cars are shoved by an engine and conditions require, a trainman must take conspicuous position on the leading car.

Employes must observe the following precautions in switching movements:

- (1) See that cars left on tracks are properly secured, clear other tracks and, when practicable, clear public crossing at least 100 feet.
- (2) When coupling or shoving cars, take proper precaution to prevent damage or fouling of other tracks by stretching coupling, and applying sufficient hand brakes. Make couplings at a speed of not more than 4 miles per hour.
- (3) Before shoving yard tracks, know there is sufficient room to hold the cars. When shoving entire length of track, see that cars are coupled and, unless otherwise provided, send a man to head end to protect the movement.
- (4) When necessary to control cars by hand brakes, know that sufficient brakes are in working order before cars are cut off.
- (5) Kicking or dropping of cars will be permitted only when such movement can be made without danger to employes, equipment, or contents of cars. Know that the track is sufficiently clear, and when dropping cars, know switches and brakes are working properly and run engine on straight track when practicable.
Cars containing flammables, explosives, or other dangerous articles, must not be dropped or kicked.
Cars must not be dropped through spring or remote control switches.
- (6) When engines may be working at both ends of a track, have proper understanding between crews involved.
- (7) Before coupling to or moving cars on tracks where cars are being loaded or unloaded, see that running boards, oil tank couplings, elevator spouts and similar connections are removed and clear, and persons, in or about cars are warned and requested to vacate cars while being switched.
- (8) Passenger cars and occupied outfit cars must not be kicked or dropped. Other cars must not be kicked or dropped into a track on which passenger or occupied outfit cars are standing.

- (9) Before switching passenger equipment or occupied outfit cars, see that brake pipe connections are made, angle cocks opened between the cars and brake system charged. Automatic brake valve only must be used by engineers in such switching.

When coupling passenger cars or occupied outfit cars, moving portion must be properly controlled and utmost caution used to avoid rough handling; couplers must be fully compressed and after coupling appears to have been made, couplers must be stretched to know that knuckles are locked, before making air and steam connections.

When a sign reading "OCCUPIED OUTFIT CARS" is attached to switch lock, or to cars, cars must not be coupled to nor moved until occupants have been notified and permission given by the foreman or his representative. Occupied outfit cars protected by these signs, when located on other than sidings, will not be protected by train order or general order.

- (10) Before coupling into cars standing on grade, near ends of tracks, derails, public crossings, cars in process of loading or unloading, a test of hand brakes must be made and fact known that car or cars are secured and coupled, and will not roll away and cause damage in event coupling is missed.
- (11) Trains, engines or cars must not be permitted to stand across another railroad when practicable to avoid it.
- (12) Cushion underframe cars and cars 70 feet long or longer must not be left standing on turnouts or curves when possible to avoid it, but must be left on straight track to permit coupling to them safely.

RULE 104. HAND OPERATED SWITCHES

- (1) Main track switches must be lined and locked for main track when not in use. Other than main track switches, equipped with switch locks, must be lined and locked for normal position when not in use.
The following other than main track switches must be kept lined in normal position, except while movement through them is being made:
 - (a) Crossover switches. Both switches of a crossover must be lined before movement is started. Movement must be completed and clear of other track involved before either switch is returned to normal position.
 - (b) Switches connecting other tracks with a siding.
- (2) Main track switches must not be left open after movement through them is completed except:
 - (a) As prescribed by MoPac Rule 402.
 - (b) When attended by a member of the crew.
 - (c) During switching operations, when a portion of the train is occupying the main track, and it is known that no other train or engine will pass over the switch.
- (3) A main track switch must not be left open for a following train or engine, unless in charge of a member of the crew of such train or engine, or an assigned switch-tender.
- (4) When practicable, the engineer must see that switches and derails near the engine are properly lined and must require other members of crew on engine to observe same.
- (5) A train or engine must not foul a main track or other track until switches connected with the movement are properly lined. Switches must not be lined when conflicting movement is closely approaching switch. Spring switches; and automatic switches identified by letter "V," or bowl or stand painted yellow; may be trailed through when lined either for or against movement, provided it has been ascertained there is no conflicting movement on or closely approaching switch. At least one truck must have trailed through an automatic switch lined against movement before a reverse movement is made.

When waiting to cross from one track to another and during the approach or passage of a train or engine on tracks involved, all switches connected with the movement must be secured in the normal position.

Main track switches must not be restored to normal position until the movement is completed or clear of the main track involved.

- (6) Where trains or engines are required to be reported clear of the main track, such report must not be made until switch has been secured in its normal position.
- (7) After restoring a main track switch to normal position, employe must test the lock to know that it is secured and see that switch points fit properly. Defective or missing main track switch locks must be replaced immediately or switch securely spiked for main track movement.
- (8) Derails must be set to derail, and, except pipe connected derails, must be locked (if equipped with locks) in that position, unless lined to permit movements.
- (9) After lining a main track switch for a train, the employe attending the switch must go to the opposite side of main track, when practicable, and not return to the operating switch stand until the movement has been completed.
When not practicable to go to opposite side of track, the employe will stand at least 20 feet from operating switch stand.
- (10) Employes alighting from a moving train to restore main track switch to normal position, must, when practicable, get off the rear end of car, on opposite side of train from the operating switch stand, and must not cross over to switch stand until train is in clear.
- (11) When a train or engine is clear of main track to meet or be passed by a train, employes must not unlock, nor take a position in the vicinity of any main track switch. They must not go beyond the clearance point for the purpose of attending the switch to be used, and must remain at least 150 feet from the switch while the expected train is approaching or passing the switch.
- (12) Employes handling switches must see that they are properly lined for route to be used and that both switch points have moved and fit in proper position, that lever is properly secured, and, when operating lever is equipped with latch, they must not step on latch, except when throwing switch.
- (13) Switches (other than spring or automatic switches) must not be run through. If a switch is run through, it is unsafe, must be protected, and must be spiked unless a trackman takes charge at once. If an engine or a car partially runs through such a switch, the entire movement must be continued.
- (14) Scale track switches must be lined for dead rails when scales are not in use.
- (15) At main track switches in ABS territory, where view is not clear for at least one mile in each direction, train and yard men will operate switch and wait 5 minutes at the switch before giving signal for train or engine movement to main track, except:
 - (a) Where switch is equipped with an electric lock.
 - (b) Where block signals governing movement to main track indicate proceed, a block indicator indicates block clear.
 - (c) Where signals on main track indicate proceed in direction of restricted view.
 - (d) At meeting points where switch is operated before the train met has passed its next signal.
 - (e) When entering the main track between signals to hostile engine or switch train standing between such signals.
 - (f) When entering main track under MoPac Rule 402.

The 5-minute wait does not relieve employes from protecting the movement, when required.

- (16) Main track switch targets will show RED when switch is lined for movement to or from main track.

RULE 104(a) and RULE 104(c), and interlocking rules and interlocking signals must be observed.

Trains and engines must be clear before expiration of the time granted.

If not clear by the time specified, protection must be afforded in both directions as prescribed by Rule 99.

If additional time is required, authority must be obtained from control operator before authorized time limit has expired.

Control operator must be notified when trains and engines are clear of the track limits granted, except when control operator authorizes by signal indication, a train or engine to move out of the track limits in the same direction in which it entered, it will be considered clear when it has passed such signal indication.

To hold track limits for the time authorized on track or tracks specified, such track or tracks must be occupied continuously, or a main track switch left open.

No movement may be made under this rule until engine-men have received and understand the track and time limits granted.

When requesting track and time limits, employe will state his name, occupation, location and when applicable, train or engine number, and will repeat limits and time granted, to the control operator, who will then give his "OK."

Definition of Low Speed: A speed that will permit stopping short of train, engine, obstruction or switch not properly lined and looking out for broken rail, but not exceeding twenty miles per hour.

RULE 105. MOVEMENT ON OTHER THAN MAIN TRACKS—Trains and engines using a siding, or any track other than a main track, must proceed at Restricted Speed.

Sidings of an assigned direction must not be used in a reverse direction unless authorized by the train dispatcher, or in an emergency under flag protection.

Cars must not be left on sidings when possible to avoid it.

When a siding is obstructed, the train dispatcher must be notified at once.

When there is possibility of fouling main track, trains must not take slack on sidings or other tracks adjacent to main track nor make reverse movement, without proper protection, when necessary.

RULE 402. Track and Time Limits. Trains or engines may occupy the main track or a controlled siding within specified limits for time periods authorized by control operator specifying track and time limits and track or tracks to be used, to be worded, for example: "Track and time limits granted on North Track 1:10 AM until 1:25 AM between north and south switches of AB siding," or "between Signal No. 625 and Signal No. 655."

While occupying track limits within time granted, trains and engines may move in either direction without flag protection, but must move at Low Speed.

A train or engine granted track and time limits, after stopping, may pass a block signal indicating Stop. Proceed at Low Speed.

- (1) To enter track and time limits.
- (2) Within track limits.

RULE 6-A. Carrizozo: Siding is first track south of Main Track formerly known as No. 1 Track, capacity 5580 feet.

Tucumcari: Track No. 2 from west switch to crossover located east of depot is designated as siding.

RULE 10-J. Speed signs to left of track:

Eastward	Reading
MP 1439.65.....	50

RULE 83-B. At open train order offices, trains may register by ticket as follows:

Conductors of trains terminating at Alfalfa unit of El Paso yard must leave register ticket with waybills.

RULE 93. Yard limits are established at the following locations:

West MP	East MP
1319.87	El Paso (No. 2 Track).....
1291.54	El Paso (No. 1 Track).....
	El Paso (Carrizozo Subdivision)..... 1300.54
	El Paso (San Antonio Div.)..... 820.00
1301.50	Fort Bliss-Tobin..... 1308.00
1343.30	Orogrande..... 1346.51
1381.05	Alamogordo..... 1385.06
1438.53	Carrizozo..... 1441.90
1523.65	Vaughn..... 1526.96
1567.79	Santa Rosa..... 1569.69
1624.95	Tucumcari..... 1629.19

RULE D-97. Applies between Anapra and Tower 47.

RULE 103. Alamogordo: Automatic crossing gates at Eighth St., will operate for continuous movement on main track or siding, but if stop is made within 150 feet of crossing, or movement is slow in switching, crossing must not be obstructed until it is known that crossing gates are down, or traffic has been protected by member of the crew. Movements on Rip No. 4 must not be made over Eighth St. crossing until member of crew has protected traffic at the crossing.

Carrizozo: Stop signs on Avenue E road crossing on No. 2 siding. Trains and engines must stop and not enter crossing until it is known that automatic crossing gates are down.

RULE 104. Tucumcari: Normal position of east switch Track No. 2 is lined for Track No. 2. Variable switch is installed on west end Track No. 2.

Normal position of east end balloon track is lined for No. 2 track. Switch point derail located 100 feet west of east switch No. 2 track.

RULE 221. El Paso (Cotton Ave.) is a train order office for trains operating on the Carrizozo Subdivision.

Train order delivery post for trains originating Alfalfa unit of El Paso Yard is located on east leg of Tucumcari Wye.

Unit for display of flashing light installed at the following locations:

Station	Location	Direction
Vaughn.....	On mast of Signal 15247.....	Eastward
Santa Rosa.....	On mast of Signal 15694.....	Westward

RULE D-251. Will apply as follows:

On No. 2 Track Anapra to El Paso (Cotton Ave.).

On No. 1 Track El Paso (Cotton Ave.) to Anapra.

On both main tracks between Tower 47 and Alfalfa unit, El Paso yard.

RULE 306. The following home signals equipped with triangular plate bearing the letter "P" have included in their control limits some special protective device. Absolute signals are listed "P-A" or "P-SA."

Eastward Signal	Protection	Westward Signal
P-A.....	{ Barricade Detector for dead end Streets MP 1298.16.....	P-12989
P-SA.....	Spring switch, west end siding, Planeport	
P-12988.....	{ Barricade detector for dead end streets at MP 1300.20 and MP 1300.37.....	P-13037
	Spring switch, east end siding, Orogrande.	P-13461
P-13468.....	High water detector, bridge 1349.60.....	P-13497
P-13738.....	High water detector, bridge 1374.15.....	P-13763
P-13788.....	High water detector, bridge 1378.96.....	P-13805
P-13838.....	High water detector, bridge 1384.35.....	P-13853
P-13804.....	High water detector, bridge 1381.50.....	P-13819
P-13886.....	High water detector, bridge 1389.06.....	P-13901
P-13922.....	High water detector, bridge 1393.43.....	P-13943
P-13972.....	High water detector, bridge 1399.23.....	P-13993
P-13994.....	High water detector, bridge 1399.61.....	P-14017
P-14068.....	High water detector, bridge 1407.15.....	P-14091
P-14092.....	High water detector, bridge 1409.75.....	P-14117
P-14364.....	High water detector, arch 1436.76.....	P-14379
P-14540.....	High water detector, bridge 1453.98.....	P-14559
P-14788.....	High water detector, arch 1479.90.....	P-14805
P-14900.....	Spring switch, west end siding, Corona..... Spring switch, east end siding, Corona.....	P-14911
P-15070.....	High water detector, bridge 1508.08.....	P-15091
P-15578.....	Spring switch, west end siding, Arabella..... Spring switch, east end siding, Arabella.....	P-15589
P-15616.....	High water detector, bridge 1561.65.....	P-15621
P-15616.....	Fire detector, bridge 1561.65.....	P-15621
P-15682.....	Spring switch, west end siding, Santa Rosa..... Spring switch, east end siding, Santa Rosa..... Spring switch, east end siding, Los Tanos..... Spring switch, east end siding, Montoya.....	P-15693 P-15781 P-16073
P-15838.....	High water detector, bridge 1584.00.....	P-15855
P-15956.....	High water detector, bridge 1595.82.....	P-15969
P-16048.....	High water detector, bridge 1605.89.....	P-16063
P-16072.....	High water detector, bridge 1607.39.....	P-16087
P-16172.....	High water detector, bridge 1618.37.....	P-16197
P-16232.....	High water detector, bridge 1623.27.....	P-16249
P-16260.....	Spring switch, west end yard track, Tucumcari.	

RULE 505. Unless otherwise instructed, eastward trains arriving Tucumcari will use Main Track and westward trains arriving Tucumcari via Mater will use track No. 2.

Trains moving on main track in either direction will move between Southern Pacific MP 1626 and Rock Island MP 637 by block signal indications, which indications will supersede the superiority of trains.

Eastward Searchlight type signal 6380 equipped with flashing white light and must display flashing white light indication before Eastward movement may be made from east end of east lead or track No. 2 to Balloon Track.

Push buttons and pilot lights installed in box mounted on side of signal case, south side of track, opposite signal 6380 and signal 1626 with time-release feature, to clear signals on one track when the control circuit on the other track is occupied.

Push buttons and pilot lights installed in box mounted on side of relay case, north side of track, opposite signal 6379 with time-release feature, to clear signals on one track when the control circuit on the other track is occupied.

Refer to Rule 505, All Subdivisions.

SPECIAL INSTRUCTIONS—CARRIZOZO SUBDIVISION

SPRING SWITCHES

RULE 538. Spring switches equipped with facing point locks are located as follows:

Station	Location	Normal Position
Planeport	West end siding	Main track
Orogrande	East end siding	Main track
Corona	West end siding	Main track
Corona	East end siding	Main track
Arabella	West end siding	Main track
Arabella	East end siding	Main track
Santa Rosa	West end siding	Main track
Santa Rosa	East end siding	Main track
Los Tanos	East end siding	Main track
Montoya	East end siding	Main track
Tucumcari	West end yard track	Main track
Tucumcari	East end yard track	No. 2 track

LETTER-TYPE INDICATORS

RULE 705. Indicators located as follows:

Illum. Letter	On Signal	Approaching	Authorizes Movement as follows:	Requires Movement as follows:
M	13022	Planeport	Proceed to east end siding.	
S	13022	Planeport	Enter siding.	
M	13039	Planeport	Proceed to west end siding.	
S	13039	Planeport	Enter siding.	

Refer to Rule 705, All Subdivisions.

ABSOLUTE-PERMISSIVE BLOCK

RULE 740. Limits extend between MP 1297.6 (east limit Tower 47), El Paso, and MP 1302.2 (west end siding), Planeport.

RULE 741. When absolute signal at either end of A-PB displays stop indication, train or engine must obtain authority from operator at Tower 47 to proceed. If signal cannot be cleared and there is no opposing train or engine causing signal to display stop indication, operator Tower 47 may authorize train or engine to proceed on main track to limit of A-PB as prescribed by Rule 507.

Trains or engines must not enter main track or use main track switches within A-PB limits without first obtaining permission from operator Tower 47.

If, for any reason, proceed indication of absolute signal cannot be acted upon at once, operator Tower 47 must be notified immediately.

Rule 744 will not apply within these limits.

GENERAL REGULATIONS

RULE 825. Portable rail skids are hung on posts at east end of siding at:

Arabella and Ancho and in telephone booth at east siding Hargis.

Portable rail skids are hung on post 100 feet east of stock pens on north side at Gallinas.

Refer to Rule 825 All Subdivisions.

RULE 827. Dragging and/or derailed equipment detectors and indicators installed at the following locations:

MP	Location
*1305.9	Between Planeport and Newman
1321.2	Between Newman and Desert
*1327.2	Between Newman and Desert
1352.9	Between Dunes and Orogrande
1398.8	Between Alamogordo and Three Rivers
1428.5	Between Three Rivers and Polly
1457.6	Between Robsart and Ancho
1502.6	Between Corona and Vaughn
1551.4	Between Pastura and Arabella

*Revolving red light mounted on Hot Box Detector Instrument house.

LOOSE WHEEL DETECTOR

MP	Direction
1305.9	Westward

Train crew members must observe white light on side of hot box scanner house at MP 1305.9. If white light is observed flashing, train must be brought to a stop and El Paso Tower yardmaster contacted to the type of indication and location of indication in train. If indication is for loose wheel, all wheels and journals must be checked on car indicated as well as on the car ahead and the car behind.

HOT BOX DETECTORS

SCANNER SITES

MP	Type	Direction	Location
1305.9	D	West	*Newman-Planeport
1305.9	C	East and West	Newman-Planeport
1327.2	C	East and West	Newman-Desert
1380.4	C	East and West	Omlee-Alamogordo
1407.20	C	East and West	Three Rivers
1445.6	C	East and West	Robsart-Carrizozo
1476.5	C	East and West	Ancho-Gallinas
1530.3	C	East and West	Vaughn-Leoncito
1563.4	C	East and West	Arabella-Santa Rosa
1589.6	C	East and West	Cuervo-Newkirk
1622.6	D	East	**Hargis-Tucumcari

*Readout at El Paso Yard.

**Readout at Tucumcari Yard.

Refer to Rule 827, All Subdivisions.

RULE 827-A. Westward trains handling tank cars containing Flammable Compressed Gas will stop at Newman and inspect train.

Refer to Rule 827-A, All Subdivisions.

RULE 872. Tucumcari and El Paso: Enginemen taking charge of engines will consider engines as having been amply supplied with water, fuel, sand and other supplies.

AIR BRAKE RULES

RULE 2. Taking Charge of Engines.

Section A, will apply at:

Tucumcari and El Paso.

RULE 17. Refer to All Subdivisions.

RULE 21. Refer to All Subdivisions.

RULE 24. Will apply at El Paso.

MISCELLANEOUS

1. Alamogordo: On track serving Holloman Air Force Base cars must not be moved beyond derail located 4975 feet from main track switch without proper authority.

2. Bunsen: Only one (1) single engine, not exceeding four (4) axles, may be used when switching on spur tracks diverging from the industrial drill track.

3. LOAD LIMIT (car and contents):

El Paso-Tucumcari, except 263,000 pounds

Gross weight of 263,000 pounds or less applies to uniformly loaded four-axle cars having trucks spaced 23 feet 0 inches or more center to center and minimum axle spacing of 5 feet 6 inches.

Gross weight uniformly loaded four-axle cars with minimum axle spacing of 6 ft. 0 in. and minimum distance 37 ft. 0 in. center to center of trucks; also, wheels 38 in. or more in diameter 315,000 pounds

El Paso-Tucumcari
Air dump cars SPMW 6400-6439 263,000 pounds

Unless authorized by Superintendent, heavier loads must not be handled.

4. SPEED RESTRICTIONS FOR OTHER THAN MAIN TRACKS

With Caution
Not Exceeding
MPH

Through sidings, yard and other tracks, wyes, balloon tracks, crossovers and turnouts 10

Except:

- Over slip switches, straight side 15
- Over slip switches, turnout side 10
- Planeport 15
- Alamogordo 15
- Orogrande 15
- Gallinas 15
- Tucumcari No. 2 track departing to main track via east or west lead 30
- From main track No. 20 turnout, to west lead to No. 2 track 30
- From main track No. 20 turnout, to east lead to No. 2 track 20

SPEED RESTRICTIONS FOR TRAINS: Maximum speed of trains in territory shown below is subject to further restrictions applicable to engines in the train as shown in **SPEED RESTRICTIONS FOR ENGINES** appearing on pages 14, 15 and 16 and **MAXIMUM SPEED PERMITTED WITH CERTAIN EQUIPMENT**, appearing on page 18 of Timetable for All Subdivisions. Speed must be further reduced as prescribed by speed signs, except as specifically authorized by Special Instructions herein, or by timetable bulletin.

EASTWARD		ALL TRAINS	WESTWARD		ALL TRAINS
MP	MP		MP	MP	
EL PASO to TUCUMCARI:			TUCUMCARI to EL PASO:		
1295.40 to 1297.76 except via slip switch opposite Tower 47		15	1627.40 to 1626.00		30
1297.76 to 1298.83 (Wyoming and Piedras St.)		10	1626.00 to 1561.81		55
1298.83 to 1302.18 except until engine passes Fred Wilson Road		25	1561.81 to 1555.00		40
1302.18 to 1400.00		10	1555.00 to 1531.80		55
1400.00 to 1432.10		25	1531.80 to 1528.55		50
1432.10 to 1434.72		45	1528.55 to 1519.85		55
1434.72 to 1463.70		35	1519.85 to 1514.10		40
1463.70 to 1473.85		50	1514.10 to 1492.00		55
1473.85 to 1487.60		55	1492.00 to 1487.60		40
1487.60 to 1492.00		50	1487.60 to 1473.85		55
1492.00 to 1514.10		55	1473.85 to 1463.70		45
1514.10 to 1519.85		50	1463.70 to 1434.72		55
1519.85 to 1528.55		50	1434.72 to 1432.10		50
1528.55 to 1531.80		55	1432.10 to 1400.00		55
1531.80 to 1555.00		45	1400.00 to 1302.18		50
1555.00 to 1561.81		55	1302.18 to 1298.83		45
1561.81 to 1626.00		55	except until engine passes Fred Wilson Road		35
1626.00 to 1627.40		30	1298.83 to 1297.76 (Piedras and Wyoming St.)		25
			1297.76 to 1295.40 except via slip switch opposite Tower 47		15
					10

Trains handling tank cars containing Flammable Compressed Gas must not exceed 55 MPH. Where maximum authorized speed is less than 55 MPH and more than 25 MPH, train must be operated at 5 MPH less than maximum authorized speed and departing Tucumcari Yard from MP 1627.70, East Switch at Tucumcari, to the West Switch at Tucumcari, MP 1626, must not exceed 15 MPH nor must not exceed 30 MPH at the following locations:

- Santa Rosa Between MP 1569 and MP 1568
- Carrizozo Between MP 1440.5 and MP 1439.5
- Alamogordo Between MP 1384 and MP 1382

and are further restricted to 20 MPH between MP 1303 and MP 1298 and to 10 MPH between Tower 47 and MP 1298.

Tucumcari: Trains arriving will reduce speed to 10 MPH prior to passing initial switch to permit rolling inspection by car inspectors.

RULE 10-I

Oral authorization and acknowledgments between Foremen and Engineers for trains to pass "Red Conditional Stop" signs must be worded in the following forms:

"SP FOREMAN AT MP CALLING SP (Train No.)"

(After train answers giving his identification):
(i. e.) SP Train

Foreman's Response

"THIS IS SP FOREMAN . . . IN CHARGE OF THE WORK BETWEEN MP . . . AND MP SP TRAIN ORDER NO. . . . WE ARE IN THE CLEAR AND YOU MAY PROCEED PAST THE RED CONDITIONAL STOP SIGN AND THROUGH THE LIMITS OF ORDER AT MPH, REPEAT MPH"*

Engineer's Response

"THIS IS ENGINEER SP TRAIN I MAY PROCEED PAST THE RED CONDITIONAL STOP SIGN AND THROUGH THE LIMITS OF ORDER NO. . . . BETWEEN MP . . . AND MP . . . AT (Speed). REPEAT (Speed) MILES PER HOUR."

Foreman must acknowledge Engineer's response as follows:

"SP TRAIN ORDER NO. . . . , BETWEEN MP AND MP MPH* OK."

*When no speed restriction account above Form "Y" Train Order, tell train engineer "At Maximum Authorized Speed."

Oral authorization and acknowledgments between Foremen and Engineers for trains to pass "Red Conditional Stop" signs in multiple main track territory must be worded in following forms:

Foreman's Response

"THIS IS SP FOREMAN IN CHARGE OF THE WORK BETWEEN MP AND MP SP TRAIN ORDER NO. . . . WE ARE IN THE CLEAR OF TRACK . . . AND YOU MAY PROCEED PAST THE RED CONDITIONAL STOP SIGN ON TRACK . . . AND THROUGH THE LIMITS OF ORDER AT MPH, REPEAT MPH."

Engineer's Response

"THIS IS ENGINEER SP TRAIN I MAY PROCEED PAST THE RED CONDITIONAL STOP SIGN AND THROUGH THE LIMITS OF ORDER NO. . . . ON TRACK BETWEEN MP AND MP AT (Speed). REPEAT (Speed) MILES PER HOUR."

Foreman must acknowledge Engineer's response as follows:

"SP TRAIN ORDER NO. . . . ON TRACK , BETWEEN MP AND MP MPH OK."

SPEED TABLE

TIME PER MILE	MILES PER HOUR
36"	100
37"	97.3
38"	94.7
39"	92.3
40"	90
41"	87.8
42"	85.7
43"	83.7
44"	81.8
45"	80
46"	78.3
47"	76.6
48"	75
49"	73.5
50"	72
51"	70.6
52"	69.2
53"	67.9
54"	66.7
55"	65.5
56"	64.3
57"	63.2
58"	62.1
59"	61
1'00"	60
1'01"	59
1'02"	58.1
1'03"	57.1
1'04"	56.2
1'05"	55.4
1'06"	54.5
1'07"	53.7
1'08"	52.9
1'09"	52.2
1'10"	51.4
1'11"	50.7
1'12"	50
1'13"	49.3
1'14"	48.6
1'15"	48
1'16"	47.4
1'17"	46.8
1'18"	46.2
1'19"	45.6
1'20"	45
1'25"	42.4
1'30"	40
1'35"	37.9
1'40"	36
1'45"	34.3
1'50"	32.7
1'55"	31.3
2'00"	30
2'15"	26.7
2'30"	24
2'45"	21.8
3'00"	20
3'30"	17.1
4'00"	15
5'00"	12
6'00"	10
7'00"	8.6
7'30"	8
8'00"	7.5
10'00"	6