14 CFR Part 171

[Docket No. 20669; Amdt. 171-11]

Non-Federal Navigation Facilities; Microwave Landing System Requirements for Non-Federal Navigational Facilities; Correction

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule; Correction.

SUMMARY: On December 17, 1981, the FAA published Amendment 171-11 to the Federal Aviation Regulations (46 FR 61560) in which it established minimum standards and procedures for the approval, installation, operation and maintenance of a Microwave Landing System (MLS) facility that is not operated and maintained by the FAA. MLS is a system designed to take the place of the Instrument Landing System (ILS) used throughout the world and is projected to meet both civil and military requirements. MLS has been selected for a standardization and chosen to satisfy this need for a new system to fulfill future requirements. Since these facilities may be operated and maintained by persons other than the FAA, the requisite standards and procedures to operate these facilities in the National Airspace System (NAS) must be provided in the form of a regulation to govern those activities. Within several sections, tables, and figures in Subpart J of FAR Part 171, the final rule contained errors of various types in the minimum standards and procedures for the approval, installation, operation, and maintenance of an MLS.

This corrective amendment is necessary to properly specify the minimum standards and procedures for the approval, installation, operation, and maintenance of an MLS.

FOR FURTHER INFORMATION CONTACT: Mr. Sotires P. Mantis, Airway Facilities Service, (AAF-720), Airway Systems Division, Federal Aviation Administration, 800 Independence Avenue, SW., Washington, D.C. 20591; telephone (202) 426-3008.

SUPPLEMENTARY INFORMATION: The amendment corrects various sections, tables, and figures of Subpart J to Part 171 of the Federal Aviation Regulations (14 CFR Part 171) as amended by Amendment 171-11 effective for MLS approvals on and after December 17, 1981 (46 FR 61560). It corrects the sections, tables, and figures as noted below. Since this action is necessary to prescribe the originally intended regulatory requirements under Amendment 171-11 and since this action

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is corrective in nature, I find that notice and public procedure regarding this action are impractical and unnecessary. Further, since it would not be in the public interest or consistent with sound regulatory practice to delay making necessary corrections to the amendment, good cause exists for making it effective in less than 30 days after publication. While this corrective amendment is effective upon its publication, the correction it makes relates back to provisions which previously became effective and which are essential to the minimum standards and procedures for the approval, installation, operation, and manufacture of an MLS and in showing compliance with the requirements of FAR Part 171, Subpart J. Therefore, it would not be proper to require compliance with the uncorrected provisions of Amendment 171-11. Thus, these corrections apply to affected requirements for MLS on or after December 17, 1981, when Amendment 171-11 became effective.

List of Subjects in 14 CFR Part 171

Navigation facilities.

The following corrections are made in FR Doc. 81-35514 appearing on 61560 in the issue of December 17, 1981:

§ 171.311 [Corrected]

1. On page 61563. In the last paragraph of § 171.311, Signal format requirements, change the wording in the second sentence so that it reads, "This change makes the DPSK compatible with the receiver decoding tests chosen by the Radio Technical Committee on Aeronautics, Special Committee 139 (RTCA SC-139) for MLS receiver standards and as provided for by ICAO at the meeting in Montreal in April 1981.

§ 171.309 [Corrected]

2. On page 61568, § 171.309(b)(5) Second sentence should be changed from "Remote controls for paragraphs (b) (l) (2) and (3) * * *" to "Remote controls for paragraphs (b) (l) (3) and (4) * * *"

§ 171.311 [Corrected]

3. On page 61568, § 171.311(a), Table 1 was incorrectly published by the **Federal Register**. The table shown below should be substituted in its place.

Table 1. FREQUENCY CHANNEL PLAN

Channel No.	Frequency (MHz)
500	5031.0
501	5031.3
502	5031.6
503	5031.9
504	5032.2
505	5032.5
506	5032.8
507	5033.1
508	5033.4
509	5033.7
510	5034.0
511	5034.3
598	5060.4
599	5060.7
600	5061.0
601	5061.3
698	5090.4
699	5090.7

4. On page 61569, § 171.311(f), Transmission Rates. In the column headed "Average data rate" change "(Hertz per second)" to read "(Hertz)".

Function	Average data rate (Hertz)
Approach Azimuth	13±0.5
High Rate Approach Azimuth	[1]39±1.5
Approach Elevation	39±1.5

[1]The higher rate is recommended for azimuth scanning antennas with beamwidths greater than two degrees. It should be noted that the time available in the signal format for additional functions is limited when the higher rate is used.

Function	Average data rate (Hertz)
Back Azimuth	6.5±0.25
Basic Data	[1]

[1]Refer to Basic Data Function Timing, Table 7.

5. On page 61571, § 171.311, Figure 6. Figure 6 as published in the **Federal Register** is in error. The correct Figure 6 is noted below.

Clock pulse No.	Carrier aquisition	Synchronization code (I_1-I_4)	Function identification code (I_5-I_{12})
0	13	18	25

Figure 6. Preamble Organization

6. On page 61572, § 171.311(i)(2)(ii), Sector Signals. In the third sentence the phrase, "* * * where no valid guidance exists," should be changed to read "* * * where no valid guidance should exist * * *"

7. On page 61572, § 171.311(i)(2)(iii)A, Table 6, Angle Scan Timing Constants. The value of 0.02 for V at the Back Azimuth should have a minus sign and therefore be −0.02 as shown below:

TABLE 6. ANGLE SCAN TIMING CONSTANTS

Function	Max value of ϕ (usec)	T_p (usec)	V (deg/usec)	T_m (usec)	Pause time (usec)	T_i (usec)
Approach Azimuth	13,000	6,800	0.02	7,972	600	13,128
High Rate Approach Azimuth	9,000	4,800	0.02	5,972	600	9,128
Approach Elevation	3,500	3,350	0.02	2,518	400	N/A
Back Azimuth	9,000	4,800	−0.02	5,972	600	9,128

8. On page 61574, § 171.311(i)(2)(B), Azimuth Angle Encoding. The first and third sentences have been rewritten. This was done to more clearly explain that the TO and FRO scans are clockwise and counterclockwise, respectively, and to properly define the directions of increasing angle values for approach and back azimuth functions. This section now reads:

(B) Azimuth Angle Encoding. Each guidance angle transmitted must consist of a clockwise TO scan followed by a counterclockwise FRO scan as viewed from above the antenna. For Approach Azimuth functions, increasing angle values must be in the direction of the TO scan; for the Back Azimuth function, increasing angle values must be in the direction of the FRO scan. The antenna has a narrow beam in the plane of the scan direction and a broad beam in the orthogonal plane which fills the vertical coverage. Zero angle must be defined along the midpoint of the proportional sector.

9. On page 61575, § 171.311(i)(2)(iv), Clearance Guidance. Figure 8, Clearance Pulse Timing for Azimuth Functions. This figure has been revised to correspond more closely to the new wording used in § 171.311(i)(2)(iii)(B). The revised Figure 8 is shown below.

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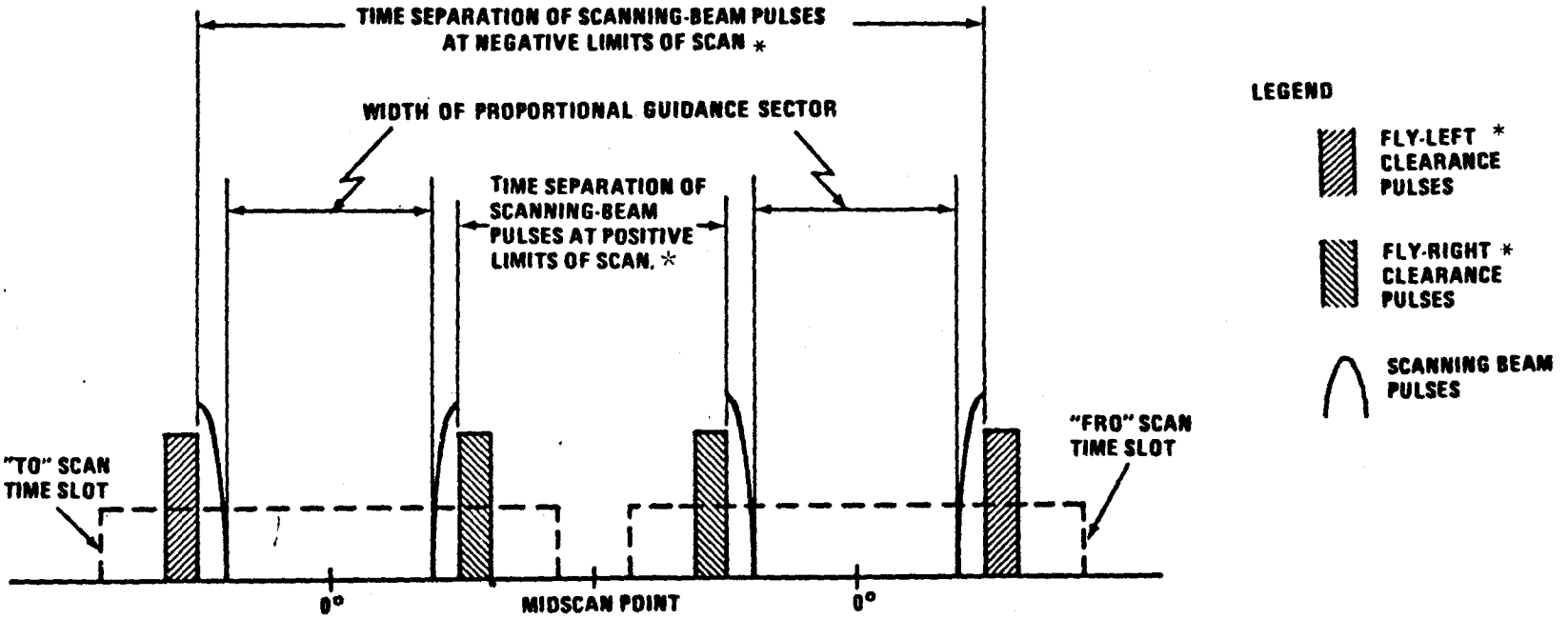

*Angle signs and clearance conventions are reversed for Back Azimuth.

FIGURE 8. CLEARANCE PULSE TIMING FOR AZIMUTH FUNCTIONS

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10. On page 61577, § 171.311(j)(19), Table 8, Basic Data. In Basic Data Word 1, the range of values for the Approach Azimuth Coverage limits was extended to 0° in order to define all of the bit-states that are available. Also, Clearance Signal Type was added and information for the spare bits was changed accordingly. In Basic Data Word 4, DME Distance and Offset information were revised and the spare bits deleted. Under notes, Note 7 has been revised and Note 9 has been added. A revised Table 8 is shown below.

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TABLE 8. BASIC DATA

WORD	DATA CONTENT	MAX. TIME BETWEEN TRANSMISSIONS (SECONDS)	BITS USED	RANGE OF VALUES	LEAST SIGNIFICANT BIT	BIT NUMBER
1	PREAMBLE	0.4	12			$I_1 - I_{12}$
	Approach Azimuth to Threshold Distance		6	0M to 6300M	100M	$I_{13} - I_{18}$
	Approach Azimuth Proportional Coverage Limit		5	0° to -60°	2°	$I_{19} - I_{23}$
	Approach Azimuth Proportional Coverage Limit		5	0° to $+60^\circ$	2°	$I_{24} - I_{28}$
	Clearance Signal Type		1	See Note 9		I_{29}
	SPARE		1			I_{30}
	PARITY		2	SEE NOTE 1		$I_{31} - I_{32}$
2	PREAMBLE	0.16	12			$I_1 - I_{12}$
	Ground Equipment Performance Level		2	SEE NOTE 2		$I_{13} - I_{14}$
	Minimum Glide-path		6	2° to 8.2°	0.1°	$I_{15} - I_{20}$
	Back Azimuth Next Function		1	SEE NOTE 3		I_{21}
	SPARE		7	SEE NOTE 6		$I_{22} - I_{28}$
	DME Status		2	SEE NOTE 2		$I_{29} - I_{30}$
	PARITY		2	SEE NOTE 1		$I_{31} - I_{32}$
3	PREAMBLE	10	12			$I_1 - I_{12}$
	Approach Azimuth Beamwidth		3	0.5° to 4°	0.5°	$I_{13} - I_{15}$
	Approach Elevation Beamwidth		3	0.5° to 2.5°	0.5°	$I_{16} - I_{18}$
	Flare Elevation Beamwidth		2	0.5° to 1°	0.25°	$I_{19} - I_{20}$

TABLE 8. BASIC DATA (Continued)

WORD	DATA CONTENT	MAX. TIME BETWEEN TRANSMISSIONS (SECONDS)	BITS USED	RANGE OF VALUES	LEAST SIGNIFICANT BIT	BIT NUMBER
	Approach Azimuth Sector guidance Alert					
	-60° to -20°		3	1° to 8°	1°	$I_{21} - I_{23}$
	-20° to -5°		2	1° to 4°	1°	$I_{24} - I_{25}$
	$+20^{\circ}$ to $+5^{\circ}$		2	1° to 4°	1°	$I_{26} - I_{27}$
	$+60^{\circ}$ to $+20^{\circ}$		3	1° to 8°	1°	$I_{28} - I_{30}$
	PARITY		2	SEE NOTE 1		$I_{31} - I_{32}$
4	PREAMBLE	10	12			$I_1 - I_{12}$
	DME Distance		12	-8000M to +8000M See Note 7	4M	$I_{13} - I_{24}$
	DME Offset		6	-155M to +155M SEE NOTE 7	5M	$I_{25} - I_{30}$
	PARITY		2	SEE NOTE 1		$I_{31} - I_{32}$
5	PREAMBLE	10	12			$I_1 - I_{12}$
	Approach Azimuth Antenna Offset		7	-126M to +126M SEE NOTE 7	2M	$I_{13} - I_{19}$
	DME or DME/P		1	DME = 0 DME/P = 1		I_{20}
	DME Channel		9	SEE NOTE 8		$I_{21} - I_{29}$
	SPARE		1			I_{30}
	PARITY		2	SEE NOTE 1		$I_{31} - I_{32}$

TABLE 8. BASIC DATA (Continued)

WORD	DATA CONTENT	MAX. TIME BETWEEN TRANSMISSIONS (SECONDS)	BITS USED	RANGE OF VALUES	LEAST SIGNI-FICANT BIT	BIT NUMBER
6	PREAMBLE	10	12			$I_1 - I_{12}$
	MLS Ground Subsystem Identification (SEE NOTE 4)			LETTERS A to Z		
	Character 2		6			$I_{13} - I_{18}$
	Character 3		6			$I_{19} - I_{24}$
	Character 4		6			$I_{25} - I_{30}$
	PARITY		2	SEE NOTE 1		$I_{31} - I_{32}$
7	PREAMBLE	1	12	SEE NOTE 5		$I_1 - I_{12}$
	Ground Equipment Performance Level		2	SEE NOTE 2		$I_{13} - I_{14}$
	Back Azimuth Antenna Distance		5	0M to 3100M	100M	$I_{15} - I_{19}$
	Back Azimuth Proportional Coverage Limit		4	-10° to -40°	2°	$I_{20} - I_{23}$
	Back Azimuth Proportional Coverage Limit		4	$+10^\circ$ to $+40^\circ$	2°	$I_{24} - I_{27}$
	Back Azimuth Beamwidth		2	1° to 4°	1°	$I_{28} - I_{29}$
	SPARE		1			I_{30}
	PARITY		2	SEE NOTE 1		$I_{31} - I_{32}$
8	PREAMBLE	10	12			$I_1 - I_{12}$
	Elevation Antenna Height		6	-1M +5.2M SEE NOTE 7	0.2M	$I_{13} - I_{18}$
	Elevation Antenna Offset		5	-150M to +150M SEE NOTE 7	10M	$I_{19} - I_{23}$
	MLS Datum Point to threshold distance		7	0M to 630M	5M	$I_{24} - I_{30}$
	PARITY		2	SEE NOTE 1		$I_{31} - I_{32}$

TABLE 8. BASIC DATA (Continued)

NOTES

NOTE 1 Parity checks that there is an even number of ones in Bits I_{13} to I_{30} and obeys the equations:

$$I_{13} + I_{14} \ \ldots \ + I_{29} + I_{30} + I_{31} = \text{EVEN}$$

$$I_{14} + I_{16} + I_{18} \ \ldots \ + I_{28} + I_{30} + I_{32} = \text{EVEN}$$

NOTE 2 Coding not yet defined. Transmit all zeros.

NOTE 3 Code for I_{21} is:

0 = No Back Azimuth Transmission
1 = Back Azimuth Transmission to follow

NOTE 4 Data word 6 is transmitted for both approach azimuth and back azimuth coverages alternately and at the 10-second maximum time between transmissions for each coverage sector, if back azimuth guidance is provided.

NOTE 5 Data word 7 is transmitted from the back azimuth equipment.

NOTE 6 These bits are reserved for future applications requiring high transmission rates. Transmit all zeros.

NOTE 7 The convention for the coding of negative numbers is as follows:

-MSB is the sign bit: 0 = +
1 = -

-Other bits represent the absolute value.

The convention for the antenna location is as follows: as viewed from the MLS approach reference datum looking toward the MLS datum point, a positive number shall represent a location to the right of the runway centre line (lateral offset) or above the runway (vertical offset) or toward the stop end of the runway (Longitudinal distance).

NOTE 8 Coding not yet defined. 9 bits provide the capability to encode frequency and mode separately. Transmit all zeros.

NOTE 9 Code for I_{29} is:

0 = Pulse Clearance Signal
1 = Scanning Clearance Signal

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§ 171.313 [Corrected]

11. On page 61581, § 171.313(a)(4)(ii), Table 9, Azimuth Power Density Requirements (dBw/m²). In Table 9, the back azimuth power density at clearance should be −79.5 and not −88 as originally published.

TABLE 9. AZIMUTH POWER DENSITY REQUIREMENTS (dBW/m^2)

Function	DPSK	Clearance	ANTENNA BEAMWIDTH (3dB)		
			1°	2°	3°
Approach Azimuth	-89.5	-88	-88	-85.5	-82
High Rate Approach Azimuth	-89.5	-88	-88	-88	-86.8
Back Azimuth	-81	-79.5	-79.5	-77	-73.5

12. On page 61585, §171.313(1), Scanning Conventions, Figure 12. The note in Figure 12 has been changed to include reference to the back azimuth angle also since both the approach azimuth and the back azimuth are shown in the figure. The note should read, "The azimuth and back azimuth angles are negative for the position of the aircraft shown here."

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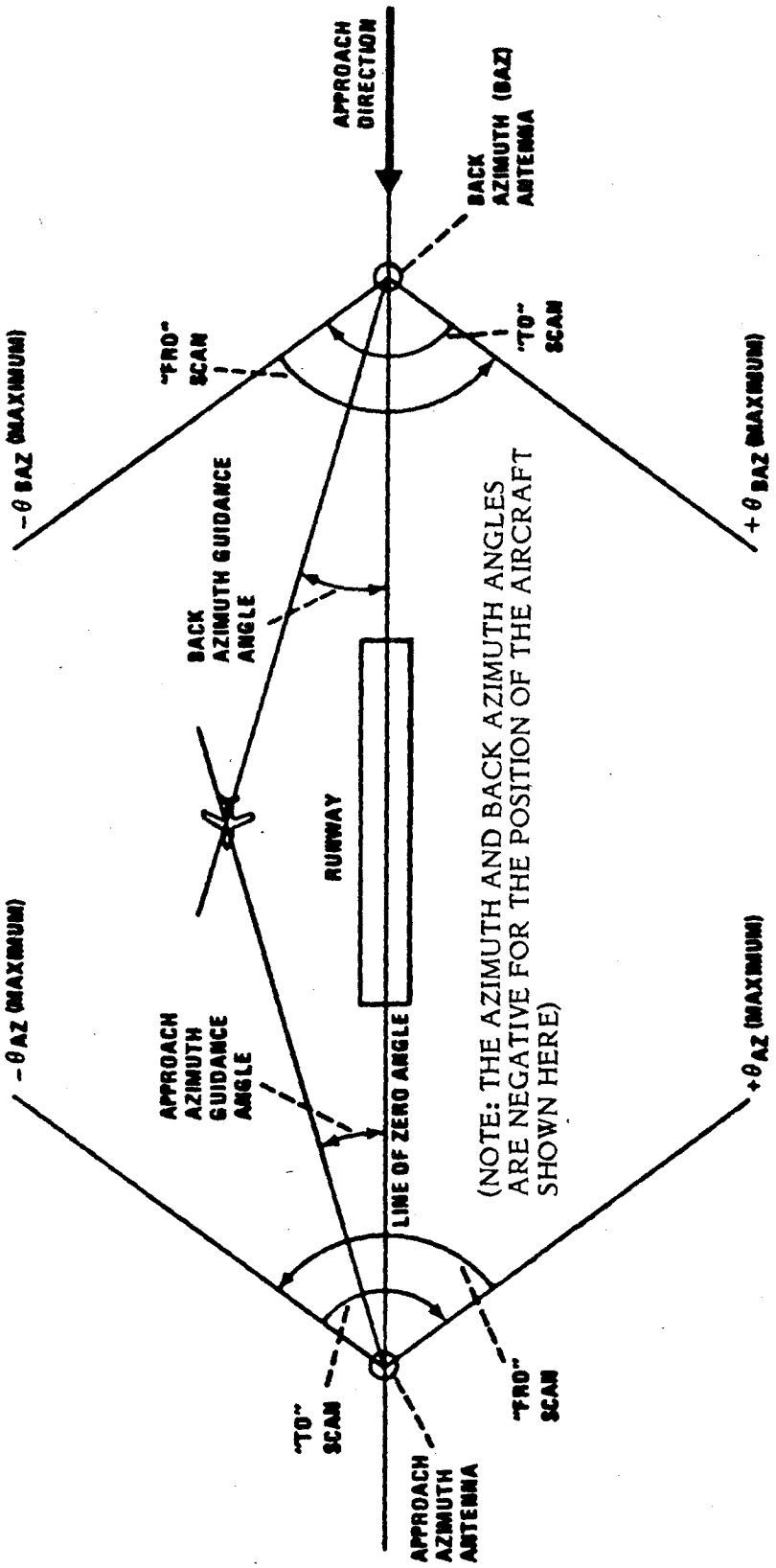

FIGURE 12. AZIMUTH GUIDANCE FUNCTIONS SCANNING CONVENTIONS

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§ 171.317 [Corrected]

13 On page 61588, § 171.317(d), Elevation Accuracy, Table 13. The figure for CMN error for the system has been corrected to read ± .75 ft. (0.23m)[1] instead of ± .75 ft (0.3m)[1], since 0.23m and not 0.3m equals .75 ft.

(Sec. 305, 307, 313(a), 601, 606, Federal Aviation Act of 1958, as amended (49 U.S.C., 1343, 1348, 1354(a), 1421, 1426); Sec. 6(c), Department of Transportation Act (49 U.S.C. 1655(c)))

Note.—The FAA has determined that this document involves a regulation which:

(1) Is not considered to be major under the procedures and criteria prescribed by Executive Order 12291;

(2) Is not considered significant under DOT Regulatory Policies and Procedures (44 FR 11034; February 26, 1979); and

(3) Will not have a significant economic impact on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

Issued in Washington, D.C., on September 17, 1982.

J. Lynn Helms,

Administrator.

[FR Doc. 82-28367 Filed 10-15-82; 8:45 am]

BILLING CODE 4910-13-M