

Cohort, Exam 1**Final Study ECG Data, Visit 1**

Composite, with adjudications – Minnesota

The ECGMA03 data set is the final study ECG data set for Visit 1. There is 1 ECG Machine coded data set from Canada in Visit 1, ECGX02. The Visual Coded record from the ECG Reading Center in Minnesota is the ETLA record. Roughly 1 in every 5 ECG records were sent to be visually coded at Minnesota in Visit 1. About half of the visual coded records were sent for quality control purposes and the remainder sent because an algorithm determined these records needed visual coding. Of these roughly 3600 visual coded (ETLA) records, about one third were found to have some significant differences between the visual and machine coding. The ECG Visual Reading Center was requested to re-code the portions of the records where differences occurred. These are the adjudicated ECAA records.

The ECGMA03 data set utilizes all of the different ECG data sets to some extent. First, if there is only an ECGX02 record for a particular ID, the ECGX02 record for that ID is duplicated in the ECGMA03 data set. Second, if there is a Visual Coded record for an ID but there was no need for adjudication, the ECGX02 record for that ID is duplicated in the ECGMA03 data set. Lastly, when there is an ECAA adjudicated record, the ECGX02 record is written to the ECGMA03 data set with the exception that the adjudicated values overwrite the original ECGX02 values when machine coded value is not in substantial agreement with the visual coded value. Details of the criteria for agreement can be found in Section 2.1.2 of ARIC Manual #5. Thus, records with ECAA adjudicated values are the only records that are potentially different from the original ECGX02 records in the ECGMA03 data set.

Attached is a listing of variables contained in the ECGMA03 data set. Unless specifically requested otherwise, these variables should be used in official ARIC analyses, although the ECGX02 (Machine Coding) and ETLA (Visual Coding) records are also distributed

<i>ECGMA01</i>		<i>ECG Tech Code</i>
<i>N</i>	<i>Value</i>	<i>Description</i>
15697	Present	Text suppressed
4		Missing

<i>ECGMA04</i>		<i>Filter Setting</i>
<i>N</i>	<i>Value</i>	<i>Description</i>
8	02	
15554	16	
139		Missing

<i>ECGMA05</i>		<i>Cart Code</i>
<i>N</i>	<i>Value</i>	<i>Description</i>
233	01	
3996	05	
858	06	
3832	07	
3684	08	
3098	09	

<i>ECGMA06</i>		<i>Recording Date</i>
<i>N</i>	<i>Value</i>	<i>Description</i>
15701	Range	01/02/1984 - 03/29/1990

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<i>ECGMA07</i>		<i>Recording Time</i>
<i>N</i>	<i>Value</i>	<i>Description</i>
15701	Range	0:03 - 23:06

<i>ECGMA07H</i>		<i>Recording Time - Hour</i>
<i>N</i>	<i>Value</i>	<i>Description</i>
15701	Range	0 - 23 (median=10 mean=10.6 std=1.5)

<i>ECGMA07M</i>		<i>Recording Time - Minute</i>
<i>N</i>	<i>Value</i>	<i>Description</i>
15701	Range	0 - 59 (median=29 mean=29.4 std=17.3)

<i>ECGMA08</i>		<i>Quality Grade (Noise/mm, Overall drift/mm, Beat to beat drift/mm)</i>
<i>N</i>	<i>Value</i>	<i>Description</i>
6319	1	
6262	2	
1783	3	
578	4	
759	5	Unacceptable

<i>ECGMA09</i>		<i>Minnesota Code L1 (Q-Q.S. Pattern I, aVL, V6)</i>
<i>N</i>	<i>Value</i>	<i>Description</i>
15569	0	No Minnesota Code Equivalent
4	11	Q/R amplitude ratio = 1/3, plus Q duration = 0.03 sec in lead I or V6
2	13	Q duration = 0.04 sec, plus R amplitude = 3 mm in lead a VL
6	21	Q/R amplitude ratio = 1/3, plus Q duration = 0.02 and < 0.03 sec in lead I or V6
4	22	Q duration = 0.03 sec and < 0.04 sec lead I or V6
1	23	QS pattern in lead I. Do not code in the presence of 7-1-1
40	31	Q/R amplitude ratio = 1/5 and < 1/3, plus Q duration = 0.02 sec and < 0.03 sec in lead I or V6.
16	33	Q duration = 0.03 sec and < 0.04 sec, plus R amplitude = 3 mm in lead aVL.
59		Missing

<i>ECGMA10</i>		<i>Minnesota Code F1 (Q-Q.S. Pattern II, III, aVF)</i>
<i>N</i>	<i>Value</i>	<i>Description</i>
15666	Range	0 - 36 (median=0 mean=0.6 std=4.2)
35		Missing

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<i>ECGMA11</i>		<i>Minnesota Code V1 (Q-Q.S. Pattern V1-V5)</i>
<i>N</i>	<i>Value</i>	<i>Description</i>
15634	Range	0 - 32 (median=0 mean=0.3 std=2.7)
67		Missing

<i>ECGMA12</i>		<i>Minnesota Code L4 (ST Junction & Segment Depression I, aVL, V6)</i>
<i>N</i>	<i>Value</i>	<i>Description</i>
15337	0	No Minnesota Code Equivalent
73	2	STJ depression = 0.5 mm and < 1.0 mm and ST segment horizontal or downward sloping in any of leads I, aVL, or V6
214	3	No STJ depression as much as 0.5 mm but ST segment downward sloping and segment or T-wave nadir = 0.5 mm below P-R baseline, in any of leads I, aVL, or V6
2	4	STJ depression = 1.0 mm and ST segment upward sloping or U-shaped, in any of leads I, aVL, or V6
17	12	STJ depression = 1.0 mm but < 2.0 mm, and ST segment horizontal or downward sloping in any of leads I, aVL, or V6
58		Missing

<i>ECGMA13</i>		<i>Minnesota Code F4 (ST Junction & Segment Depression II, III, aVF)</i>
<i>N</i>	<i>Value</i>	<i>Description</i>
15523	0	No Minnesota Code Equivalent
38	2	STJ depression = 0.5 mm and < 1.0 mm and ST segment horizontal or downward sloping in lead II or aVF
98	3	No STJ depression as much as 0.5 mm, but ST segment downward sloping and segment or T-wave nadir = 0.5 mm below P-R baseline in lead II.
4	4	STJ depression = 1.0 mm and ST segment upward sloping, or U-shaped, in lead II
3	12	STJ depression = 1.0 mm but < 2.0 mm and ST segment horizontal or downward sloping in lead II or aVF
35		Missing

<i>ECGMA14</i>		<i>Minnesota Code V4 (ST Junction & Segment Depression V1-V5)</i>
<i>N</i>	<i>Value</i>	<i>Description</i>
15403	0	No Minnesota Code Equivalent
75	2	STJ depression = 0.5 mm and < 1.0 mm and ST segment horizontal or downward sloping in any of leads V1 - V5
122	3	No STJ depression as much as 0.5 mm, but ST segment downward sloping and segment or T-wave nadir = 0.5 mm below P-R baseline in any of leads V2 - V5
7	4	STJ depression = 1.0 mm and ST segment upward sloping or U-shaped in any of leads V1 - V5
4	11	STJ depression = 2.0 and ST segment horizontal or downward sloping in any of leads V1-V5
20	12	STJ depression = 2.0 and ST segment horizontal or downward sloping in any of leads V1 - V5
70		Missing

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<i>ECGMA15</i>		<i>Minnesota Code L5 (T Wave I, aVL, V6)</i>
<i>N</i>	<i>Value</i>	<i>Description</i>
14055	0	No Minnesota Code Equivalent
12	1	T amplitude negative 5.0 mm or more in either of leads I, V6, or in lead aVL when R amplitude is = 5.0 mm
335	2	T amplitude negative or diphasic (positive-negative or negative-positive type) with negative phase at least 1.0 mm but not as deep as 5.0 mm in lead I or V6, or in lead aVL when R amplitude is = 5.0 mm
792	3	T amplitude zero (flat), or negative, or diphasic (negative-positive type only) with less than 1.0 mm negative phase in lead I or V6, or in lead aVL when R amplitude is = 5.0 mm
454	4	T amplitude positive and T/R amplitude ratio < 1/20 in any of leads I, aVL, V6; R wave amplitude must be = 10.0 mm.
53		Missing

<i>ECGMA16</i>		<i>Minnesota Code F5 (T Wave II, III, aVF)</i>
<i>N</i>	<i>Value</i>	<i>Description</i>
15074	0	No Minnesota Code Equivalent
152	2	T amplitude negative or diphasic with negative phase (negative-positive or positive-negative type) at least 1.0 mm but not as deep as 5.0 mm in lead II, or in lead aVF when QRS is mainly upright
322	3	T amplitude zero (flat), or negative, or diphasic (negative-positive type only) with less than 1.0 mm negative phase in lead II; not Coded in lead aVF
120	4	T amplitude positive and T/R amplitude ratio < 1/20 in lead II; R wave amplitude must be = 10.0 mm.
33		Missing

<i>ECGMA17</i>		<i>Minnesota Code V5 (T Wave V1-V5)</i>
<i>N</i>	<i>Value</i>	<i>Description</i>
14274	0	No Minnesota Code Equivalent
30	1	T amplitude negative 5.0 mm or more in any of leads V2 - V5
546	2	T amplitude negative (flat), or diphasic (negative-positive or positive-negative type) with negative phase at least 1.0 mm but not as deep as 5.0 mm, in any of leads V2 - V5
405	3	T amplitude zero (flat), or negative, or diphasic (negative-positive type only) with less than 1.0 mm negative phase, in any of leads V3 - V5
380	4	T amplitude positive and T/R amplitude ratio < 1/20 in any of leads V3, V4, V5; R wave amplitude must be = 10.0 mm
66		Missing

<i>ECGMA18</i>		<i>Minnesota Code L92 (ST Segment Elevation Anterolateral Site (Leads I, aVL, V6))</i>
<i>N</i>	<i>Value</i>	<i>Description</i>
15636	0	No Minnesota Code Equivalent
6	2	ST segment elevation = 1.0 mm in any of leads I, aVL, V6
59		Missing

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<i>ECGMA19</i>		<i>Minnesota Code F92 (ST Segment Elevation Posterior (Inferior) Site (Leads II, III, aVF))</i>
<i>N</i>	<i>Value</i>	<i>Description</i>
15654	0	No Minnesota Code Equivalent
11	2	STJ depression = 0.5 mm and < 1.0 mm and ST segment horizontal or downward sloping in lead II or aVF
36		Missing

<i>ECGMA20</i>		<i>Minnesota Code V92 (ST Segment Elevation Anterior Site (Leads V1, V2, V3, V4, V5))</i>
<i>N</i>	<i>Value</i>	<i>Description</i>
15431	0	No Minnesota Code Equivalent
197	2	No STJ depression as much as 0.5 mm, but ST segment downward sloping and segment or T-wave nadir = 0.5 mm below P-R baseline in any of leads V2 - V5
73		Missing

<i>ECGMA21</i>		<i>Minnesota Code C2 (QRS Axis Deviation Codes)</i>
<i>N</i>	<i>Value</i>	<i>Description</i>
13006	0	No Minnesota Code Equivalent
14	3	Right (optional code when 2-2 is not present). QRS axis from +90° through +119° in leads I, II, III. (The algebraic sum of major positive and major negative QRS waves must be zero or negative in I and positive in II and III.)
1525	11	
459	12	
610	21	Left. QRS axis from -30° through -90° in leads I, II, III. (The algebraic sum of major positive and major negative QRS waves must be zero or positive in I, negative in III, and zero or negative in II.)
37	22	Right. QRS axis from +120° through -150° in leads I, II, III. (The algebraic sum of major positive and major negative QRS waves must be negative in I, and zero or positive in III, and in I must be one-half or more of that in III.)
50		Missing

<i>ECGMA22</i>		<i>Minnesota Code C3 (High Amplitude R Wave Codes)</i>
<i>N</i>	<i>Value</i>	<i>Description</i>
14254	0	No Minnesota Code Equivalent
13	2	Right: R amplitude = 5.0 mm and R amplitude = S amplitude in the majority of beats in lead V1, when S amplitude is > R amplitude somewhere to the left on the chest of V1 (codes 7-3 and 3-2, if criteria for both are present).
307	12	
47	13	
358	14	
117	31	Left: R amplitude > 26 mm in either V5 or V6, or R amplitude > 20.0 mm in any of leads I, II, III, aVF, or R amplitude > 12.0 mm in lead aVL. (All criteria measured only on second to last complete normal beat.)
492	32	Right: R amplitude = 5.0 mm and R amplitude = S amplitude in the majority of beats in lead V1, when S amplitude is > R amplitude somewhere to the left on the chest of V1 (codes 7-3 and 3-2, if criteria for both are present).
113		Missing

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<i>ECGMA23</i>		<i>Minnesota Code C6 (A-V Conduction Defect Codes)</i>
<i>N</i>	<i>Value</i>	<i>Description</i>
14892	0	No Minnesota Code Equivalent
439	3	P-R (P-Q) interval = 0.22 sec in the majority of beats in any of leads I, II, III, aVL, aVF
4	4	
264	5	Short P-R interval. P-R interval < 0.12 sec in all beats of any two of leads I, II, III, aVL, aVF
2	41	Wolff-Parkinson-White Pattern (WPW), persistent. Sinus P-wave. P-R interval < 0.12 sec, plus QRS duration = 0.12 sec, plus R peak duration = 0.06 sec, coexisting in the same beat and present in the majority of beats in any of leads I, II, aVL, V4 - V6
100		Missing

<i>ECGMA24</i>		<i>Minnesota Code C7 (Ventricular Conduction Defect)</i>
<i>N</i>	<i>Value</i>	<i>Description</i>
13794	0	No Minnesota Code Equivalent
60	1	
128	2	
347	3	Incomplete right bundle branch block. QRS duration < 0.12 sec in each of leads I, II, III, aVL, aVF, and R' > R in either of leads V1, V2
213	4	Intraventricular block. QRS duration = 0.12 sec in a majority of beats in any of leads I, II, III, aVL, aVF. (7-4 suppresses all 2, 3, 4, 5, 9-2, 9-4, 9-5 codes.)
371	5	R-R' pattern in either of leads V1, V2 with R' amplitude = R.
675	6	Incomplete left bundle branch block. (Do not code in the presence of any codable Q- or QS-wave.) QRS duration = 0.10 sec and < 0.12 in the majority of beats of each of leads I, aVL, and V5 or V6.
9	11	Complete left bundle branch block (LBBB). (Do not code in presence of 6-1, 6-4-1, 6-8, 8-2-1 or 8-2-2.) QRS duration ≥ 0.12 sec in a majority of beats in any of leads I, II, III, aVL, aVF, plus R peak duration = 0.06 sec in a majority of beats (of the same QRS pattern) in any of leads I, II, aVL, V5, V6. (7-1-1 suppresses 1-2-3, 1-2-7, 1-2-8, 1-3-2, 1-3-6, all 2, 3, 4, 5, 9-2, 9-4, 9-5 codes. If any other codable Q-wave coexists with the LBBB pattern, code the Q and diminish the 7-1-1 code to a 7-4 code.)
8	21	Complete right bundle branch block (RBBB). (Do not code in the presence of 6-1, 6-4-1, 6-8, 8-2-1 or 8-2-2.) QRS duration = 0.12 sec in a majority of beats in any of leads I, II, III, aVL, aVF, plus: R' > R in V1 or V2; or QRS mainly upright, with R peak duration = 0.06 sec in V1 or V2; or S duration > R duration in all beats in lead I or II. (7-1 suppresses 1-2-3, 1-2-7, 1-2-8, 1-3-2, 1-3-6, all 2, 3, 4, 5, 9-2, 9-4, 9-5 codes.)
96		Missing

<i>ECGMA25</i>		<i>Minnesota Code C91 (Low QRS Amplitude)</i>
<i>N</i>	<i>Value</i>	<i>Description</i>
15367	0	No Minnesota Code Equivalent
242	1	Low QRS amplitude. QRS peak-to-peak amplitude < 5 mm in all beats in each of leads I, II, III, or < 10 mm in all beats in each of leads V1 - V6. (Check calibration before coding.)
92		Missing

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<i>ECGMA26</i>		<i>Minnesota Code C93 (P-Wave Amplitude > 2.5 MM In Any of Leads II, III, AVF in Majority of Beats)</i>
<i>N</i>	<i>Value</i>	<i>Description</i>
15600	0	No Minnesota Code Equivalent
31	3	P-wave amplitude = 2.5 mm in any of leads II, III, aVF, in a majority of beats.
70		Missing

<i>ECGMA27</i>		<i>Minnesota Code C94 (QRS Transition Zone)</i>
<i>N</i>	<i>Value</i>	<i>Description</i>
6240	0	No Minnesota Code Equivalent
8420	1	QRS transition zone at V3 or to the right of V3 on the chest. (Do not code in the presence of 6-4-1, 7-1-1, 7-2-1 or 7-4.)
1041	2	QRS transition zone at V4 or to the left of V4 on the chest. (Do not code in the presence of 6-4-1, 7-1-1, 7-2-1 or 7-4.)

<i>ECGMA28</i>		<i>Minnesota Code C95 (T-Wave Amplitude)</i>
<i>N</i>	<i>Value</i>	<i>Description</i>
15498	0	No Minnesota Code Equivalent
88	5	T-wave amplitude > 12 mm in any of leads I, II, III, aVL, aVF, V1, V2, V3, V4, V5, V6. (Do not code in the presence of 6-4-1, 7-1-1, 7-2-1 or 7-4.)
115		Missing

<i>ECGMA29</i>		<i>Minnesota Code E7 (Duration Criteria for R-E Score for LVH)</i>
<i>N</i>	<i>Value</i>	<i>Description</i>
8977	0	No Minnesota Code Equivalent
6724	7	QRS Duration > 90 MS OR Intrinscord Deflection V5 OR V6 > 50 MS

<i>ECGMA30</i>		<i>CIIS Value</i>
<i>N</i>	<i>Value</i>	<i>Description</i>
15582	Range	-20.75 - 46.5 (median=2.98 mean=4.189 std=9.699)
119		Missing

<i>ECGMA31</i>		<i>Heart Rate</i>
<i>N</i>	<i>Value</i>	<i>Description</i>
15680	Range	34 - 161 (median=66 mean=66.7 std=10.4)
21		Missing

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<i>ECGMA32</i>		<i>Q Or QS Amplitude:I</i>
<i>N</i>	<i>Value</i>	<i>Description</i>
15672	Range	0 - 482 (median=28 mean=37.1 std=43.7)
29		Missing

<i>ECGMA33</i>		<i>Q Or QS Amplitude:III</i>
<i>N</i>	<i>Value</i>	<i>Description</i>
15669	Range	0 - 2307 (median=0 mean=74.3 std=146.4)
32		Missing

<i>ECGMA34</i>		<i>Q Or QS Amplitude:V5</i>
<i>N</i>	<i>Value</i>	<i>Description</i>
15677	Range	0 - 1134 (median=20 mean=36.2 std=52.0)
24		Missing

<i>ECGMA35</i>		<i>Q Or QS Amplitude:V6</i>
<i>N</i>	<i>Value</i>	<i>Description</i>
15665	Range	0 - 771 (median=36 mean=46.5 std=50.0)
36		Missing

<i>ECGMA36</i>		<i>R Amplitude:I</i>
<i>N</i>	<i>Value</i>	<i>Description</i>
15672	Range	0 - 2721 (median=749 mean=786.4 std=334.2)
29		Missing

<i>ECGMA37</i>		<i>R Amplitude:III</i>
<i>N</i>	<i>Value</i>	<i>Description</i>
15669	Range	0 - 2287 (median=207 mean=319.2 std=306.6)
32		Missing

<i>ECGMA38</i>		<i>R Amplitude:aVL</i>
<i>N</i>	<i>Value</i>	<i>Description</i>
15657	Range	0 - 2676 (median=413 mean=468.9 std=335.3)
44		Missing

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<i>ECGMA39</i>		<i>R Amplitude:V2</i>
<i>N</i>	<i>Value</i>	<i>Description</i>
15651	Range	0 - 3378 (median=415 mean=473.6 std=307.3)
50		Missing

<i>ECGMA40</i>		<i>R Amplitude:V5</i>
<i>N</i>	<i>Value</i>	<i>Description</i>
15677	Range	0 - 5620 (median=1320 mean=1373.7 std=497.0)
24		Missing

<i>ECGMA41</i>		<i>R Amplitude:V6</i>
<i>N</i>	<i>Value</i>	<i>Description</i>
15665	Range	0 - 4834 (median=1051 mean=1091.8 std=380.6)
36		Missing

<i>ECGMA42</i>		<i>S Amplitude:I</i>
<i>N</i>	<i>Value</i>	<i>Description</i>
15672	Range	-871 - 0 (median=-33 mean=-69.2 std=92.9)
29		Missing

<i>ECGMA43</i>		<i>S Amplitude:III</i>
<i>N</i>	<i>Value</i>	<i>Description</i>
15669	Range	-2916 - 0 (median=-110 mean=-257.6 std=342.3)
32		Missing

<i>ECGMA44</i>		<i>S Amplitude:V1</i>
<i>N</i>	<i>Value</i>	<i>Description</i>
15654	Range	-4882 - 0 (median=-799 mean=-835.5 std=464.1)
47		Missing

<i>ECGMA45</i>		<i>S Amplitude:V2</i>
<i>N</i>	<i>Value</i>	<i>Description</i>
15651	Range	-5254 - 0 (median=-1032 mean=-1091.9 std=546.1)
50		Missing

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<i>ECGMA46</i>		<i>S Amplitude:V5</i>
<i>N</i>	<i>Value</i>	<i>Description</i>
15677	Range	-1996 - 0 (median=-175 mean=-210.6 std=192.9)
24		Missing

<i>ECGMA47</i>		<i>S Amplitude:V6</i>
<i>N</i>	<i>Value</i>	<i>Description</i>
15665	Range	-978 - 0 (median=-29 mean=-69.7 std=100.9)
36		Missing

<i>ECGMA48</i>		<i>T negative Amplitude:aVL</i>
<i>N</i>	<i>Value</i>	<i>Description</i>
15657	Range	-763 - 0 (median=0 mean=-8.9 std=33.4)
44		Missing

<i>ECGMA49</i>		<i>T negative Amplitude:aVF</i>
<i>N</i>	<i>Value</i>	<i>Description</i>
15669	Range	-461 - 0 (median=0 mean=-4.6 std=22.0)
32		Missing

<i>ECGMA50</i>		<i>T negative Amplitude:V6</i>
<i>N</i>	<i>Value</i>	<i>Description</i>
15665	Range	-852 - 0 (median=0 mean=-6.4 std=36.0)
36		Missing

<i>ECGMA51</i>		<i>T positive Amplitude:aVR</i>
<i>N</i>	<i>Value</i>	<i>Description</i>
15671	Range	0 - 588 (median=0 mean=2.1 std=18.4)
30		Missing

<i>ECGMA52</i>		<i>T positive Amplitude:V1</i>
<i>N</i>	<i>Value</i>	<i>Description</i>
15654	Range	0 - 1165 (median=20 mean=96.5 std=130.1)
47		Missing

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<i>ECGMA53</i>		<i>T positive Amplitude: V6</i>
<i>N</i>	<i>Value</i>	<i>Description</i>
15665	Range	0 - 1018 (median=203 mean=208.9 std=121.4)
36		Missing

<i>ECGMA54</i>		<i>QRS Interval</i>
<i>N</i>	<i>Value</i>	<i>Description</i>
15701	Range	61 - 264 (median=96 mean=97.6 std=12.9)

<i>ECGMACY</i>		<i>Contact Year</i>
<i>N</i>	<i>Value</i>	<i>Description</i>
15701	1	

<i>ECGMAFLG</i>		<i>ECGMA Record Present</i>
<i>N</i>	<i>Value</i>	<i>Description</i>
15701	1	

<i>ID</i>		<i>Aric Subject ID (Cir)</i>
<i>N</i>	<i>Value</i>	<i>Description</i>
15701	Present	Text suppressed