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MEMORANDUM FOR:	Matthew M. Kuzemchak, NWS NEPA Coordinator
FROM:	Jessica Schultz, Radar Program Manager, National Weather Service
SUBJECT:	Finding of No Significant Impact for Lowering the Minimum Scan Angle of the KMAX Weather Service Radar - Model 1988 Doppler (WSR-88D) serving the Medford, OR, area – DECISION MEMORANDUM

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Based on the subject environmental assessment, I have determined that no significant environmental impacts will result from the proposed action. I request your concurrence in this determination by signing below. Please return the memorandum for our files.

10 1. I concur ___//signed 9/11/2017// _____ Date

11

12 2. I do not concur _____ Date

13

14 Attachment

15 **MEMORANDUM**

16
17 **TO:** All Interested Government Agencies and Public Groups

18
19 Under the National Environmental Policy Act, an environmental review has been performed on
20 the following action.

21
22 **TITLE:** Lowering the Minimum Scan Angle of the KMAX Weather Service Radar -
23 Model 1988 Doppler (WSR-88D) serving the Medford, OR, area

24
25 **LOCATION:** Mt. Ashland, Jackson County, Oregon

26
27 **SUMMARY:**

28
29 The National Weather Service (NWS) owns and operates the existing Weather Service Radar,
30 Model 1988 Doppler (WSR-88D) serving the Medford, OR, area. The radio call letters of the
31 radar are KMAX and the radar is located atop Mt. Ashland, about 18 miles south-southwest of
32 the city of Medford, Jackson County, OR. The KMAX WSR-88D was commissioned in 1996
33 and is one of 155 WSR-88Ds in the nationwide network.

34 The KMAX WSR-88D antenna transmits a narrow focused main beam with a width of 1 degree.
35 In normal operation, the WSR-88D antenna rotates horizontally to cover all directions (i.e.
36 azimuths). The radar antenna also varies the scan angle at which it points with respect to the
37 horizon. The scan angle is measured along the axis of the main beam and can be changed in 0.1
38 deg increments. Currently, the KMAX radar operates at a minimum of scan angle of +0.5
39 degrees (deg) above the horizon. NWS proposes to reduce the minimum scan angle of the
40 KMAX WSR-88D from the current minimum of +0.5 deg to -0.2 deg (the proposed action).
41 Lowering the minimum scan angle would provide enhanced coverage of the lower portions of
42 the atmosphere. No construction activities or physical modification of the KMAX WSR-88D
43 would be required to implement the proposed action; the only change would be to the radar's
44 operating software.

45 **RESPONSIBLE OFFICIAL:** Jessica Schultz, Radar Program Manager, National Weather
46 Service, 1200 Westheimer Drive, Norman, OK 73069, Tel. (405)573-8808, email:
47 Jessica.a.schultz@noaa.gov

48
49 The environmental review process led us to conclude that this action will not have a significant
50 effect on the human environmental. A copy of the finding of no significant impact, including the
51 supporting environmental assessment is enclosed for your information. Please submit any
52 comments to the responsible official named above by September 30, 2017.

53 Also, please send one copy of your comments to me in Room 3353, 1325 East-West Highway,
54 Silver Spring, MD 20910.

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56

57

58 Sincerely

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60

61 Matthew M. Kuzemchak

62 NWS NEPA Coordinator

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64

65 Enclosure

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67 **FINDING OF NO SIGNIFICANT IMPACT (FONSI)**
68 **LOWERING THE MINIMUM SCAN ANGLE OF THE WEATHER**
69 **SERVICE RADAR-MODEL 1988, DOPPLER (WSR-88D) SERVING**
70 **THE MEDFORD, OREGON, AREA**

71 **ENVIRONMENTAL ASSESSMENT SUMMARY**

72 **Purpose and Need**

73 NWS is part of the National Oceanic and Atmospheric Administration (NOAA) of the U.S.
74 Department of Commerce. NWS operates a nationwide network of Doppler weather radars,
75 which collect data on atmospheric conditions, and include precipitation type and intensity, wind
76 speed and direction, and storms, from near ground level to above 10,000 ft in elevation above the
77 ground. NWS staff uses these data to prepare daily forecasts and issue severe weather watches
78 and warnings, and to further NWS's mission to protect and enhance life and property and the
79 nation's economy. Operating this radar at lower scan angles would increase the area of radar
80 coverage, providing additional data on atmospheric conditions to NWS forecasters and other
81 data users. The change in area covered at 2,000 ft above site level (ASL) and 10,000 ft ASL
82 would increase by 328% and 94%, respectively.

83 **Description of Proposed Action**

84 The KMAX WSR-88D is an S-band Doppler, dual polarized weather radar, which NWS uses to
85 collect meteorological data to support weather forecasts and severe weather warnings for
86 portions of Southern Oregon and Northern California. The KMAX WSR-88D antenna transmits
87 a narrow focused main beam with a width of 1 degree. In normal operation, the WSR-88D
88 antenna rotates horizontally to cover all directions (i.e. azimuths). The radar antenna also varies
89 the scan angle at which it points with respect to the horizon. The scan angle is measured along
90 the axis of the main beam and can be changed in 0.1 deg increments. Currently, the KMAX radar
91 operates at a minimum of scan angle of +0.5 degrees (deg) above the horizon. NWS proposes to
92 reduce the minimum scan angle of the KMAX WSR-88D from the current minimum of +0.5 deg
93 to -0.2 deg (the proposed action). Lowering the minimum scan angle would provide enhanced
94 coverage of the lower portions of the atmosphere. No construction activities or physical
95 modification of the KMAX WSR-88D would be required to implement the proposed action; the
96 only change would be to the radar's operating software.

97 **Alternatives Considered**

98
99 NWS evaluated the benefits and potential impacts of lowering the minimum scan angle of the
100 KMAX WSR-88D to each angle between +0.4 and -0.1 deg in 0.1 degree increments. That
101 analysis found that a minimum scan angle of -0.2 deg would result in the greatest improvement
102 in radar coverage (see Appendix C). Additionally operating the KMAX WSR-88D at a minimum

103 scan angle of -0.2 deg would not result in significant environmental impacts. Based on this
104 information, NWS selected a minimum scan angle of -0.2 deg as the proposed action analyzed in
105 this EA.

106
107 The no action alternative consists of continued operation of the KMAX WSR-88D at the existing
108 minimum scan angle of +0.5 dg. The improvements in radar coverage would not be achieved
109 and the project objectives would not be met. The proposed action would result in increased RF
110 exposure at certain portions of the atmosphere while the no-action alternative would not change
111 RF exposure levels from existing levels. Under both the proposed action and the no action
112 alternative, RF exposure during normal WSR-88D operations would conform to safety standards
113 established by ANSI/IEEE, OSHA, and FCC. The WSR-88D main beam directly illuminates the
114 upper portion (but not the base) of the KTVL television tower. During infrequent stationary
115 antenna operation, exposure of persons on the tower could exceed occupational safety standards,
116 which could be avoided by pointing the main beam at least 1.5 deg away from the KTVL tower
117 (Mitigation Measure 1). Compared to the proposed action, the no-action alternative would
118 decrease the portion of the KTVL tower directly affected, but would not eliminate this effect.
119 Mitigation measure 1 would and would reduce this impact to a less than significant level.

120 **Environmental Consequences**

121 NWS prepared an Environmental Assessment (EA) analyzing the potential environmental
122 consequences of the implementing the proposed action in compliance with the President's
123 Council on Environmental Quality (CEQ) National Environmental Policy Act implementing
124 regulations (40 Code of Federal Regulations Parts 1500 – 1508) and NOAA Administrative
125 Order (NOA) 216-6, *Environmental Review Procedures for Implementing the National*
126 *Environmental Policy Act*.

127 Lowering the minimum scan angle of the KMAX WSR-88D would not require physical changes
128 to the radar, vegetation removal, or ground disturbance. The proposed action would not result in
129 significant effects in the following subject areas:

- 130
- 131 • Land Use and Coastal Zone Management
 - 132 • Geology, Soils, and Seismic Hazards
 - 133 • Drainage and Water Quality
 - 134 • Transportation
 - 135 • Air Quality
 - 136 • Flood Hazards
 - 137 • Wetlands
 - 138 • Biological Resources / Protected Species
 - 139 • Cultural and Historic Resources
 - 140 • Environmental Justice Socioeconomic Impacts
 - 141 • Farmlands

- 142 • Energy Consumption
- 143 • Visual Quality/ Light Emissions
- 144 • Solid and Hazardous Waste
- 145 • Wild and Scenic Rivers

146
147 The lower minimum scan angle would not result in the KMAX WSR-88D main beam impinging
148 on the ground in the vicinity of the WSR-88D site. The proposed action would slightly increase
149 RF exposure levels in the vicinity of the KMAX WSR-88D. During normal operation of the
150 radar with rotating antenna, RF exposure would comply with the national safety standards
151 developed by the Institute of Electrical and Electronic Engineers (IEEE) and the adopted by the
152 American National Standards Institute (ANSI). RF emissions during normal operation would
153 also comply with Federal Communications Commission and Occupational Safety and Health
154 Administration safety standards for RF exposure of the general public and workers. This is true
155 for the nearby Mt. Ashland Ski Area chair lift and KTVL Television Tower, where RF exposure
156 would comply with all safety standards.

157
158 NWS may infrequently operate the WSR-88D with a stationary antenna for testing purposes.
159 Operation with a stationary antenna would result in RF exposure levels at the upper portion of
160 the nearby KTVL televisions tower exceeding RF exposure standards for the general public.
161 Mitigation Measure 1 requires that the WSR-88D main beam be pointed at least 1.5 degree in
162 azimuth from the KTVL tower during stationary antenna operation, which would lower RF
163 exposure sufficiently to comply with all safety standards.

164
165 Because the KMAX WSR-88D operates in a frequency band dedicated to government relocation
166 services and the main beam would not impinge on the ground surface in the radar vicinity, the
167 proposed action would have low potential to cause radio interference with television, radio,
168 cellular telephone, personal communications devices (PCDs), electro-explosive devices, fuel
169 handling, active implantable medical devices, or astronomical observatories.

170
171 **Mitigation Measure**

172 When operating with stationary antenna, the NWS would point the KMAX WSR-88D antenna at
173 least 1.5 degree in azimuth away from the KTVL television tower.

174
175 **Public and Agency review of the Draft EA**
176

177 The NWS distributed the Draft EA to interested members of the public and government
178 agencies for review and comment. Comments on the Draft EA were accepted by NWS during a
179 30-day comment period ending on July 30, 2017. The NWS distributed the Draft EA to
180 interested members of the public and government agencies for review and comment. Comments
181 on the Draft EA were accepted by NWS during a 30-day comment period ending on July 30,

182 2017. Two emails commenting on the Draft EA were received. Mr. Rod Ralston stated that he
183 supported the proposed action because it would improve detection of low-elevation precipitation
184 in the Grants Pass area. Mr. Matthew Kuzemchak, NWS Environmental Safety Team, also
185 provided comments. The Final EA has been revised as necessary to respond to those comments.

186 .

187 **FINDING OF NO SIGNIFICANT IMPACT**

188

189 The CEQ Regulations state that the determination of significance using an analysis of effects
190 requires examination of both context and intensity, and lists ten criteria for intensity (40 CFR
191 1508.27). In addition, NAO 216-6, Section 6.01(b) 1 – 11, provides eleven criteria, the same ten
192 as the CEQ Regulations and one additional for determining whether the impacts of a proposed
193 action are significant. Each criterion is discussed below with respect to the proposed action and
194 considered individually as well as in combination with the others.

195

196 *1. Can the proposed action reasonably be expected to cause both beneficial and adverse impacts*
197 *that overall may result in a significant effect, even if the effect will be beneficial?*

198

199 No. The EA report analyzes the potential for implementation of the proposed action to cause
200 environmental consequences based on established standards and criteria. The proposed action
201 would not result construction or ground disturbance. The only environmental consequence would
202 be a slight increase in RF power density in a small portion of the atmosphere. During normal
203 operations, WSR-88D RF emissions would comply with national and international safety
204 standards for human exposure.

205

206 *2. Can the proposed action reasonably be expected to significantly affect public health or safety?*

207

208 No. The lower minimum scan angle would not result in the KMAX WSR-88D main beam
209 impinging on the ground in the vicinity of the WSR-88D site. The proposed action would
210 slightly increase RF exposure levels in the vicinity of the KMAX WSR-88D. During normal
211 operation of the radar with rotating antenna, RF exposure would comply with the national safety
212 standards developed by the Institute of Electrical and Electronic Engineers (IEEE) and the
213 adopted by the American National Standards Institute (ANSI). RF emissions during normal
214 operation would also comply with Federal Communications Commission and Occupational
215 Safety and Health Administration safety standards for RF exposure of the general public and
216 workers. This is true for the nearby Mt. Ashland Ski Area chair lift and KTVL Television
217 Tower, where RF exposure would comply with all safety standards.

218

219 NWS may infrequently operate the WSR-88D with a stationary antenna for testing purposes.

220 Operation with a stationary antenna would result in RF exposure levels at the upper portion of
221 the nearby KTVL televisions tower exceeding RF exposure standards for the general public.

222 Mitigation Measure 1 requires that the WSR-88D main beam be pointed at least 1.5 degree in

223 azimuth from the KTVL tower during stationary antenna operation, which would lower RF
224 exposure sufficiently to comply with all safety standards.

225

226 RF emissions from the WSR-88D would also comply with RF exposure standards for
227 implantable medical devices established by the FCC and the Association for Advancement of
228 Medical Instrumentation and would not interfere with operation of those devices.

229 *3. Can the proposed action reasonably be expected to result in significant impacts to unique*
230 *characteristics of the geographic area, such as proximity to historic or cultural resources, park*
231 *lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas?*

232

233 No. No places listed or eligible for listing on the National Register of Historic Places or are
234 present within the proposed actions APE. No effects on historic or cultural resources would
235 result. The KMAX WSR-88D is not proximity to prime farmlands, wetlands or wild and scenic
236 rivers and those resources would not be affected. The project area is not within and/or does not
237 contain critical habitat or other ecologically critical areas. The proposed action would not
238 adversely affect or restrict outdoor recreation opportunities (e.g. skiing, snowshoeing, and
239 hiking) at the Mt. Ashland Ski Area.

240

241 *4. Are the proposed action's effects on the quality of the human environment likely to be highly*
242 *controversial?*

243

244 No. The proposed action would not result in construction or ground disturbance and would
245 comply with a wide margin with safety standards for human exposure to RF emission.

246

247 *5. Are the proposed action's effects on the human environment likely to be highly uncertain or*
248 *involve unique or unknown risks?*

249

250 No. The proposed action would not increase the radar's power output, but would spread
251 those emissions over a larger portion of the atmosphere. RF power densities at the newly covered
252 area would be the same as at existing covered portions of the atmosphere. The EA contains
253 detailed calculations of RF exposure levels and compares projected exposure levels to safety
254 standards for RF exposure of the general public and workers, potentially RF sensitive activities
255 (e.g. fuel handling, use or transport of electro-explosive devices), and active implantable medical
256 devices. The proposed action would comply with all safety standards, provided direct
257 illumination of the KTVL Television Broadcast Tower is avoided during infrequent stationary
258 antenna operation, as is required by Mitigation Measure 1. The WSR-88D main beam would
259 also not directly illuminate any astronomical observatories. There is very little potential for
260 unknown or uncertain impacts to result.

261

262 *6. Can the proposed action reasonably be expected to establish a precedent for future actions*
263 *with significant effects or represent a decision in principle about a future consideration?*

264

265 No. The proposed action is limited to lowering the minimum scan angle of the existing

266 WSR-88D serving the Medford, OR, area, and the EA analysis is specific to that radar. If the
267 NWS were to consider lowering the minimum scan angle of another WSR-88D in the nationwide
268 network, they will perform a site specific analysis of potential effects for that radar in
269 compliance with NEPA and NAO 216-6. No precedents would result for future actions with
270 significant effects or a decision in principle about a future consideration.

271
272 *7. Is the proposed action related to other actions that when considered together will have*
273 *individually insignificant but cumulatively significant impacts?*

274 No. The Final EA report evaluates the potential for the proposed action, in conjunction with
275 past, present, and reasonably foreseeable future actions to cause significant environmental
276 effects. The proposed action is not reliant upon or connected to other actions, nor is it relied
277 upon for the occurrence of other actions. Therefore, the proposed action will not result in a
278 significant cumulative impact to the human environment.

279
280 *8. Can the proposed action reasonably be expected to adversely affect districts, sites, highways,*
281 *structures, or objects listed in or eligible for listing in the National Register of Historic Places or*
282 *may cause loss or destruction of significant scientific, cultural, or historical resources?*

283
284 No. Based on a review of the Oregon Historic Site Database maintained by the State Historic
285 Preservation Office (SHPO), no historic places are located within the proposed action's Area of
286 Potential Effect (APE) and no impacts will result to places listed or eligible for listing on the
287 National Register of Historic Places.

288
289 *9. Can the proposed action reasonably be expected to have a significant impact on endangered*
290 *or threatened species, or their critical habitat as defined under the Endangered Species Act of*
291 *1973?*

292
293 No. Based on information obtained from the U.S. Fish and Wildlife Service, the proposed
294 action would not adversely affect threatened and endangered species or critical habitat.

295
296 *10. Can the proposed action reasonably be expected to threaten a violation of Federal, state, or*
297 *local law or requirements imposed for environmental protection?*

298
299 No. The effect of the proposed action on the human environment has been analyzed relative
300 to applicable Federal, state and local environmental laws or regulations. No regulatory
301 violations or other significant environmental effects are expected to result.

302
303 *11. Can the proposed action reasonably be expected to result in the introduction or spread of a*
304 *non-indigenous species?*

305
306 No. The proposed action has no potential to cause the transport, release, propagation or
307 spread of non-indigenous species.

308

309

DETERMINATION

310 After careful and thorough consideration of the Final EA report, the undersigned finds that
311 lowering the minimum scan angle of the KMAX WSR-88D serving the Medford, OR area from
312 the current +0.5 deg to -0.2 deg is consistent with existing national environmental policies and
313 objectives set forth in sections 101(a) and 101(b) of NEPA and will not significantly affect the
314 quality of the human environment or otherwise result in any condition requiring consultation
315 pursuant to section 102(2) (c) of NEPA.

316 As described in section 5.03.c of NOA 216-6, a Finding of No Significant Impact is
317 supported and appropriate for lowering the minimum scan angle of the KMAX WSR-88D
318 serving the Medford, OR area from the current +0.5 deg to -0.2 deg. as analyzed in the EA
319 report. Preparation of an environmental impact statement for this action is not necessary.

320

321

322

323 //signed 8/31/2017// _____

324 Jessica Schultz
325 Radar Program Manager
326 Radar Operations Center
327 National Weather Service

Date