



Federal Emergency Management Agency

Region IX Building 105
Presidio of San Francisco, California 94129 1983 DEC 20 PM 12 42

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United States Nuclear Regulatory Commission
Region V
1450 Maria Lane, Suite 210
Walnut Creek, California 94596

Attention: Mr. Ross A. Scarano, Director
Radiological Safety and Safeguards Programs

Gentlemen:

Subject: Letter Directed to the Honorable Nunzio Palladino,
Chairman of the Nuclear Regulatory Commission, from
Dr. Richard Kranzendorf, Spokesperson for Concerned
Cal Poly Faculty and Staff, dated November 4, 1983.

This letter will respond to your request for assistance in formulating a response to subject letter relative to concerns about plans and preparedness of the offsite jurisdictions around the Diablo Canyon Nuclear Generating Station. The information provided below is the result of discussions with the Office of Emergency Services, State of California, and the Office of Emergency Services, County of San Luis Obispo.

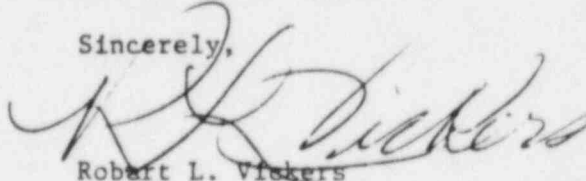
1. Evacuation Time Considerations. Evacuation Times Assessments for Diablo Canyon Nuclear Power Plant, September 1980, Alan M. Voorhees and Associates, Inc., based on empirical data during various weather conditions and using "standard engineering techniques" described the conclusion that a 20% additional time factor should be applied to normal evacuation times for heavy-rain conditions. The study further concluded that "heavy-rain" constituted a "worst case" for emergency evacuation planning and that fog was considered to be a substantively lesser problem. Traffic studies around the Rancho Seco Nuclear Generating Station, conducted by Robert Hubenette and Associates, also confirmed a 20% additional travel time during rainy weather.
2. Evacuation Transportation Routes. The County has addressed certain flooding problems and have budgeted funding for improvements to the impacted areas. People can be evacuated east on Los Osos Valley Road and it is considered unlikely that both Morro Bay and San Luis Obispo would be evacuated concurrently. Based on current information, the State of California Office of Emergency Services advises that experience with the areas addressed in subject letter has reflected that these evacuation routes are considered to be reasonable and safe even though affected by flooding during a postulated emergency.
3. Emergency Broadcast System. Officially designated Emergency Broadcast System stations are required to have an emergency power system. Radio station KVEC was operating on-the-air with emergency backup power. The two and a half hour interval applies only to the amount of time it took the Pacific Gas and Electric Company to resume initial power because of a blown fuse. At this time, alternate radio stations are seriously considering the emergency power system installation.

4. Earthquake Considerations. Earthquake Emergency Planning at Diablo Canyon. September 2, 1981, TERA Corporation, thoroughly addresses all aspects of earthquake effects at the Diablo Canyon Nuclear Power Plant. The California Department of Transportation performed a subsequent study of projected damages identified by the TERA Corporation report and the length of time required for necessary repairs. That information was made available to the County of San Luis Obispo. During a nuclear emergency, the County plans call for the establishment of a special group to consider any earthquake problems. All these special efforts, as well as the planning activities resulting therefrom, have been extensive and quite significant.

In general, this office feels that Dr. Kranzdorf has based his comments on a "worst case" basis that would require one hundred percent evacuation from all local jurisdictions within the 10-mile emergency planning zone simultaneously, without benefit of emergency public information, and under extreme adverse weather conditions. Inasmuch as there is no known experience, planning and preparedness measures are directed at addressing physical probabilities, applying standards for the most advantageous use of resources available. Through a cyclic system of exercising, designed to provide continuous plan improvement, the public is afforded the optimum protection that can be developed. Recent exercises, conducted to assess the planning efforts of the offsite jurisdictions around the Diablo Canyon Nuclear Generating Station have demonstrated that there is a reasonable assurance that the appropriate protective measures can and will be taken in the event of a radiological emergency.

Should you require further assistance with regard to this matter, do not hesitate to contact Thomas F. Brinton or John P. Sucich at 415-556-9840.

Sincerely,



Robert L. Vickers
Regional Director

cc: Office of Emergency Services
State of California

Office of Emergency Services
County of San Luis Obispo

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9 December 1983

1983 DEC 15 AM 10:58

Mr. John B. Martin
Regional Administrator
United States Nuclear Regulatory Commission, Region V
1450 Maria Lane, Suite 210
Walnut Creek, CA 94596

REGION V ICF

Dear Mr. Martin:

My thanks for your thoughtful reply of December 2 (Attachment A) to the November 4 letter of the Concerned Cal Poly Faculty and Staff addressed to NRC Chairman Palladino regarding two specific reasons for the lack of public confidence in the Emergency Response Plan for the Diablo Canyon Nuclear Power Plant. It is indeed heartening to receive such a personal and courteous letter; we are most appreciative.

In your last paragraph you kindly wrote: "Please feel free to contact us if you wish to provide further data reflecting on your concerns..." Without wishing to be a burden to your office, I'd like to update one of the concerns mentioned in our November 4 letter and bring a new chapter of another, older concern to your attention.

One of our concerns in our previous letter was with an often flooded area known as the "Twin Bridges" or "Twin Trestles". Money to replace the bridges was said to be unavailable for at least three years. According to the Telegram-Tribune story of November 15 (Attachment B), County officials apparently realize a problem exists on one of only two ways out of Los Osos/Baywood Park (the other route is a two lane road leading into the city of San Luis Obispo which is also subject to flooding) and they intend to rebuild the Bridges. Unfortunately, the article states that the effort could begin at the earliest in fiscal 1985-86, many, many months after full-power operations at Diablo Canyon are scheduled to begin.

The other concern we would like to bring to your attention is the continuing problem with sirens being used as the primary method of notifying the population within the Basic Emergency Planning Zone. Per the Telegram-Tribune article of March 8 (Attachment C), power is interrupted several times each winter and when electricity is lost, the sirens which "do work off regular power lines", are lost. Whether the explanations offered by

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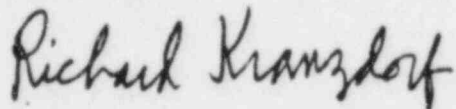
9 December 1983
Mr. John B. Martin
Page Two

by the PG & E spokeswoman in the article are adequate is something for the NRC, FEMA and the California State OES to decide. We certainly do not believe there is an adequate back-up system.

We are barely into our winter season and as Attachments D, E and F make clear, power has thrice been disrupted in the area. Undoubtedly, there will be additional partial or complete losses of power in our area this winter and each time some or virtually all of the sirens will be out of commission. Such back-up systems as expecting everyone to have a battery powered radio at the ready or counting on police cars with sirens to pick up the slack are pale imitations of a fully operating siren system.

Our thanks for your attention to the matters raised. We appreciate your understanding why our group has continuing grave doubts about the Emergency Response Plan and why public confidence in this Plan is so low.

Sincerely,



Dr. Richard Kranzdorf, Spokesperson
Concerned Cal Poly Faculty and Staff
160 Graves Avenue
San Luis Obispo, CA 93401

Enclosures

cc: United States Nuclear Regulatory Commission Chairman and Commissioners
Congressman Leon Panetta
Congressman William Thomas
Congressman Edward Markey
United States Federal Emergency Management Agency



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION V
1450 MARIA LANE, SUITE 210
WALNUT CREEK, CALIFORNIA 94596

December 2, 1983

ATTACHMENT A

Dr. Richard Kranzdorf, Spokesperson
Concerned Cal Poly Faculty and Staff
160 Graves Avenue
San Luis Obispo, California 93401

Dear Dr. Kranzdorf:

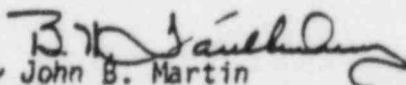
This is to acknowledge receipt of your letter of November 4, 1983 to the Chairman of the U. S. Nuclear Regulatory Commission and attachments thereto, expressing concerns regarding a lack of public confidence in emergency planning for the Diablo Canyon Nuclear Power Plant and impediments to evacuation of elements of the public in the event of a nuclear emergency.

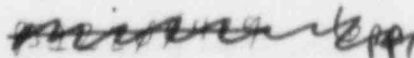
Thank you for the reasoned and documented statement regarding your concerns. They will serve as a basis for inquiry, hopefully leading to a sound evaluation and resolution of these concerns.

Please be advised that we have provided copies of your correspondence to the U. S. Federal Emergency Management Agency (FEMA), which has a specific assignment by Executive Order of the President to take the lead in offsite radiological emergency planning and response. We will work closely with FEMA, the State of California Office of Emergency Services, and cognizant local emergency services elements in evaluating and resolving your expressed concerns.

Please feel free to contact us if you wish to provide further data reflecting on your concerns or if we may answer any questions regarding our handling of the evaluation of your concerns.

Sincerely,


John B. Martin
Regional Administrator



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ATTACHMENT B

Joint effort seen to repair Twin Bridges

11/16/86
Morro Bay will pool its money with the county to help rebuild the Twin Bridges that lead to Los Osos.

The bridges are within the city limits of Morro Bay but periodically flood, blocking one of only two ways into Los Osos.

The Morro Bay City Council on Monday directed its staff to formalize an agreement with San Luis Obispo County to share costs in rebuilding the bridges on South Bay Boulevard.

The joint effort, which could begin in fiscal year 1985-86, will cost about \$1 million. Morro Bay and the county will each pay 10 percent, about \$100,000, and Caltrans will pay about 80 percent, or about \$800,000, most of that federal funds, said City Administrator Paul Baxter.

The county has been notified that Caltrans doesn't expect to have money available for the repairs for at least three years.

South Bay Boulevard is occasionally flooded at the bridges when Chorro Creek is backed up by high tides and winter rains.

The council also accepted a \$50,000 payment from the Harbor Commission that will be put into the city's general fund. The harbor fund had unanticipated revenues and lower-than-expected expenditures this year of about \$100,000. The Harbor Fund still owes the city about \$550,000.

A part of the surplus will be used by the Harbor Department to purchase two portable radios for \$5,000. The remaining surplus will be put in a special account for maintenance and improvement projects.

No Diablo sirens if power out

If an emergency at the Diablo Canyon nuclear power plant were accompanied by a power failure, most of San Luis Obispo County's warning sirens wouldn't work, a group of anti-nuclear Cal Poly faculty members said today.

"Had Diablo Canyon been operating this winter and a general emergency occurred, there's a distinct possibility it would have been a major disaster with considerable loss of life," Richard Kranzdorf, a member of the Concerned Cal Poly Faculty and Staff, said during a news conference at Mission Plaza.

It could prove fruitless to turn on radios for emergency information,

because, though emergency broadcast station KVEC has an emergency power supply, plug-in radios wouldn't work, Kranzdorf said.

If these problems were accompanied by the kind of fierce storms the county suffered this winter, KVEC could be knocked off the air, and wind and flood damage could block evacuation routes.

"Virtually every road mentioned as a major artery (in the county's emergency plan) has been clogged or blocked or out of commission at least once this winter," Kranzdorf said.

Most sirens in the Pacific Gas and

Electric system erected to warn of emergencies at Diablo Canyon do work off regular power lines, PG&E representative Suzanna G. Brown conceded.

She said only those in remote areas such as See Canyon have independent, solar power systems.

Brown said, however, that people don't need to hear sirens for information in an emergency, such as a prolonged blackout.

"In an emergency situation, people tend to be pretty level headed," she said. "People want to know, and, if they want to know badly enough, they'll find a way."

County Emergency Coordinator Linda West agreed that, "In any kind of emergency, people should have battery operated radios. It could be totally unrelated to Diablo Canyon.

"There's no way that the county can either provide those (radios) or require that people have them, but it just makes good common sense."

Asked about storm-caused travel problems, West said that if evacuation routes were impassable or if there was too little time to evacuate, county emergency officials would ask people to remain indoors instead of evacuating.

ATTACHMENT C

Damp holiday weather; Alaskan storm on tap

The blustery Alaskan storm that brought chilly rains and 8- to 12-foot surf to the Central Coast this weekend will leave clear skies behind today, but residents should brace for a repeat performance for the Thanksgiving weekend.

National Weather Service specialist Mike Campbell in Santa Maria predicted mostly fair skies today and Tuesday, with nighttime temperatures dipping to the upper 20s to mid-30s. Winds will be northwest from 10 to 20 mph today.

Temperatures dipped to 29 degrees in Atascadero this morning and 32 in Santa Margarita.

"It looks like the next storm will be here just in time for Thanksgiving," Campbell said.

The weekend storm dumped .41 inches of rain, bringing the seasonal

total to 3.34 inches. The normal rainfall for this time of year is 1.64 inches, he said. The total last year at this time was 3.37 inches.

There were some inconveniences from the storm.

Suzanne G. Brown of Pacific Gas and Electric Co. said Templeton and north Atascadero lost electricity off and on for an hour from 1:30 p.m. Saturday. It affected 4,000 customers.

A tree on a power line knocked out power for 130 Cambria customers on Pine Knolls from 12:30 to 3:15 p.m. Sunday.

Brown said there were short scattered power failures elsewhere in the county due to blown fuses.

On the ocean today, winds will be northwest 15 to 25 knots, with seas 3 to 5 feet and northwest swells 8 to 12 feet.

Winter storm watches were in effect throughout the West today as snow continued to fall in Nevada, Utah, Arizona and Colorado.

One to 2 feet of snow fell in the Sierra Nevada and around Lake Tahoe, the National Weather Service reported.

Big storm blusters across SLO county

By Tom Fuls
Staff Writer

4/11/83

High winds and heavy rains spawned in Alaska roared into the Central Coast on Thursday, causing power failures in some areas and heavy surf along the coast.

Big surf is blamed for the sinking of a sailboat off the Big Sur coastline Thursday afternoon. Its two passengers are still missing. (See separate story on Page A-2.)

While Thursday's downpour should dissipate by this evening, another storm is expected to slam into the area by early Saturday, according to Jeff Smith of the National Weather Service in Santa Maria.

Thursday's storm is the tail end of Typhoon Marge that originated in the Pacific off Japan and moved off the Pacific Northwest, Smith said.

The storm dumped 2.66 inches of rain on San Luis Obispo, bringing the city's season rainfall total to 6.52 inches, almost double for the rest of the county, according to the Weather Service.

Santa Margarita collected 1.74 inches of rain, while Arroyo Grande recorded .36, Morro Bay .44 and Shandon .51 inches.

The forecast calls for partly cloudy skies with decreasing showers today with highs in the 60s and winds variable at 20 mph, Smith said.

Storm-related electric blackouts affected about 3,000 homes and businesses in the North County and Cambria, said Pacific Gas and Electric Co. representative Suzanne G. Brown.

A 90-minute power failure struck a large part of San Luis Obispo at 10:05 a.m. today, forcing French and San Luis Obispo General hospitals to hook up emergency generators.

The power failures began at about 6 p.m. Thursday as winds picked up and continued throughout the night, Brown said. Power was restored to most areas by 8 a.m. today, said Brown.

"In Cambria, there were scattered but pretty thorough outages," she said.

In Cambria and Atascadero, blackouts occurred when trees and branches fell on power lines, Brown said.

Paso Robles Airport was without power most of the night when the main electric line serving it went down, said Brown, adding Paso Robles radio station KPRL was knocked off the air for several

hours.

County sheriff's deputy Wilbur Mills said his department received a few telephone calls Thursday night, mostly about burglar alarms that went off accidentally.

At Morro Bay Harbor, 6- to 8-foot swells hampered boats from getting through the 600-foot entrance this morning, the Coast Guard reported.

The waves were running close together and at least one fishing boat had to wait more than two hours outside the entrance before it could enter safely, according to the Coast Guard.

Renovation work on the city's north breakwater was halted again because of the high waves and poor weather conditions.

The Atascadero Police Department's communication center had to resort to emergency power for about an hour during the night after PG&E lines serving it went dead.

A power pole caught fire east of Paso Robles at about 8 p.m. Thursday as electrical equipment shorted out. California Department of Forestry firefighters quickly had the fire under control and then stood by until after midnight as PG&E crews repaired damage.

Jim Bower of Pacific Telephone Co. said his company received "about double" the normal amount of service calls with scattered failures throughout the county, but there were no serious reports of trouble.

ATTACHMENT E

T-T delayed ✓

The *Telegram-Tribune* is being delivered late today but it is not your paper carrier's fault. A 90-minute electrical power failure in San Luis Obispo this morning delayed printing.

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Storm brings rain, knocks out power

A weekend storm that struck Northern California with hurricane force winds brought only scattered cloudbursts to the Central Coast.

No serious damage was reported in San Luis Obispo County as a result of Saturday's storm, though its winds were blamed for electrical blackouts affecting about one-third of county residents.

The storm stranded 35 high school students from Southern California on the Morro Bay sandspit. Morro Bay Harbor Patrolmen ferried the students to safety.

Most of the power failures occurred Saturday morning, as winds smashed tree limbs into power lines and sometimes shook the wires themselves so hard that they banged together, said Suzanne G. Brown of Pacific Gas and Electric Co.

She said a single blackout in northern Atascadero and southern Templeton affected 3,000 customers for 1½ hours while 3,580 homes and businesses in Arroyo Grande and Oceano were without power for about an hour Saturday morning.

A series of failures hit San Luis Obispo's Foothill Boulevard area, leaving 1,986 customers without power for 45 minutes, and 193 for an hour or more. Another 2,113 were affected by momentary outages, Brown said.

She said that 250,000 of PG&E's 3 million customers in Northern and Central California suffered power losses during the storm and 4,000 — mostly on the San Francisco Peninsula — were still without power this morning.

The storm also forced Grover City, Morro Bay and Paso Robles to postpone their Christmas parades and San Luis Obispo to delay its Christmas in the Plaza.

The Paso Robles and Grover City parades were rescheduled next Saturday — the Paso Robles parade at 11 a.m. and the Grover City parade at 10 a.m.

Christmas in the Plaza will also take place next weekend, said San Luis Obispo Special Events Coordinator Joan Ponza.

"Everything's going to be exactly the same (as planned)," she said, "the entertainment and everything."

No information was available this morning on plans for rescheduling the Morro Bay parade.

County Engineer George C. Protapas said gusty winds on Saturday

— See STORM, Page A-3

(Continued from Page A-1)

morning toppled about five trees in Los Osos, one tree in Cambria and one in the North County.

The students stranded on the sandspit were from Orange County's Dana Hills High School.

Morro Bay Harbor Patrolmen Larry Linder and Dick Rodgers reported ferrying 35 of the 57 students and two teachers back across the harbor to near their Morro Bay State Park campsite in the evening.

"At least two of the kids were so cold they couldn't hold onto anything and had trouble standing," Linder said. None of the students required hospital treatment, but "They sure made a beeline to their campfires."

The students were stranded on the spit after a day of clamdigging and studying tidepool life.

"The rope on our boat's outboard starter broke when we prepared to

return to camp and in the struggle to start the motor, we swamped the boat (a small inflatable skiff)," said Lucy Kelleway, vice principal at the school.

"All but 20 of our students had wetsuits and many of them simply swam back across the harbor. We quickly warmed the rest with fresh clam chowder and hot chocolate made over our campfires."

The county's heaviest rainfall was in Santa Margarita, where 1.23 inches fell and San Luis Obispo, which recorded 1.22 inches.

In Northern California, the storm overturned vehicles and planes, shut down roads and bridges, felled trees, sank boats, mangled homes and 'cut power' to an estimated quarter-million people.

The storm was blamed for at least three deaths.

In San Leandro, a 90-year-old woman was hurled by the winds into

a steel fence and killed. Near Wilcox, a mother and son were killed when their car hit a flooded section and ran into another car.

The Weather Service reported wind gusts up to 80 mph on San Francisco Bay, clocking peak gusts of 92 mph on San Bruno Mountain a few miles south of San Francisco.

The Golden Gate Bridge was closed because of the high winds and all shipping in the Golden Gate channel west of the bridge was halted for a time because of mountainous waves.

In the the Sierra Nevada, the storm closed Interstate 80, the main transmountain freeway, with blizzard snows and stranded many motorists.

National Weather Service forecaster Bill Greba blamed the nasty conditions on a front "anchored to an intense surface low in Northern California."

The Weather Service said another storm may threaten rain on the Central Coast by Tuesday while a third storm is expected in California before the weekend.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

Before Administrative Judges:
John F. Wolf, Chairman
Glenn O. Bright
Dr. Jerry Kline

DOCKETED
UNDER

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OFFICE OF SECRETARY
DOCKETING & SERVICE
BRANCH

SERVED SEP 11 1982

In the Matter of:

PACIFIC GAS AND ELECTRIC COMPANY
(Diablo Canyon Nuclear Power Plant,
Units 1 and 2)

Docket Nos. 50-275 OL
50-323 OL

August 31, 1982

INITIAL DECISION

Appearances

For the Applicant:

Bruce Norton, Esquire
Norton, Burke, Berry, & French, P.C.

For the State:

Lawrence Coe Lanpher, Esquire
Herbert H. Brown, Esquire
Kirkpatrick, Lockhart, Hill, Christopher, & Phillips

For the Intervenors:

Joel R. Reynolds, Esquire
David S. Fleischaker, Esquire
for San Luis Obispo Mothers for Peace

For the Nuclear Regulatory Commission Staff:

William J. Olmstead, Esquire
Donald F. Hassell, Esquire
George E. Johnson, Esquire

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Planning Standard b(10): Protective Actions

245. Planning Standard b(10) states: A range of protective actions have been developed for the plume exposure pathway EPZ for emergency workers and the public. Guidelines for the choice of protective actions during an emergency, consistent with Federal Guidance, are developed and in place and protective actions for the ingestion exposure pathway EPZ appropriate to the locale have been developed.

246. Procedures for the activation and functioning of the onsite emergency organization, including use of an emergency warning signal system, are in place. The warning system is to be used to alert onsite personnel that an emergency condition exists. The actions to be taken upon activation of distinctively different signals are to be communicated to onsite visitors and construction workers as well as to all onsite plant personnel. Offsite communication systems, including telephones and radio broadcasts, are also in place and available to warn the public (Applicant Emergency Plan, Ex. 73, §§ 6, 7; Sears Testimony ff. Tr. 12638, p. 32)

247. Methods exist to account for plant staff personnel, visitors and any construction workers who may be on site. (Sears Testimony ff. Tr. 12638, p. 33; Applicant Ex. 73, § 6.3.1.2.)

Evacuation of onsite non-essential personnel is planned as a protective action. (Applicant Ex. 73, § 6.3.1.3; Applicant Ex. 75, p.

249. Sheltering is used as a protective action for non-essential personnel on site when the dose expected during evacuation is higher than that which would be received in shielded areas. (Applicant Panel No. 6 Testimony ff. Tr. 12184, p. 6-2)

250. The Applicant can evacuate onsite non-essential personnel even during heavy rains on more than one road. It can also provide evacuation by helicopters or boats. (Sears, Tr. 12649, 12667-69, 12791-792; Shiffer, Tr. 12773-776)

251. Persons remaining or arriving on site during the emergency will receive protection by using respiratory equipment as required, using protective clothing, by taking thyroid blocking pills when it is determined that their use is appropriate and by using dosimetry and contamination control. (Applicant Emergency Plan, §§ 6.3.2 and 6.3.3; Applicant Panel No. 6 Testimony, p. 6-2)

252. The evacuation time estimate made by Applicant conforms with the requirements of Appendix 4 of NUREG-0654 and is therefore accepted for the purposes of this case. (Sears Testimony ff. Tr. 12638, p. 34; "Evacuation Times Assessment Study for the Diablo Canyon Nuclear Plant,"

(Applicant Ex. 75A)) A second estimate of evacuation time, which was done independently by the TERA Corporation, leads to similar estimates as the above report. (Applicant Ex. 84)

253. The plan includes a procedure that provides criteria for expanding the boundaries of onsite controlled areas or the setting up of new controlled areas if the need arises during an emergency to establish administrative control for radiation protection purposes. (Sears Testimony ff. Tr. 12638, p. 34; Applicant Ex. 74A)

254. The plan sets out the mechanism for recommending protective action to the appropriate State and County authorities after the occurrence of a radiological event. (Applicant's Ex. 75A, Number EP-RB-10.)

255. FEMA's evaluation of offsite preparedness found no corrective actions needed to meet this planning standard. (Applicant Panel No. 1 Testimony ff. Tr. 11782, Attach. 2; Eldridge Testimony ff. Tr. 12688, p. 5-6)

256. Ingestion pathway protective actions have been developed by the Applicant, the State and the County. Actions would be taken by the State and County to prevent or reduce the concentration of radioactivity in human food and animal feed. (Applicant Ex. 73, App. C, pp. 12, 13, 35; Applicant Ex. 80, § II.10)

The County plan has provisions for notifying all segments of transient and resident population for protecting persons whose ability is impaired due to institutional or other confinement; for use of radioprotective drugs for emergency workers and institutionalized persons; the means of relocation, including buses needed for non-car owners and school populations; and precautionary measures such as limiting hospital admissions, closing schools, parks, and beaches. (Applicant Ex. 80, §§ II.5, II.7, II.8; Applicant Ex. 81, § III.01, III.02, III.05, III.08)

258. Joint Intervenor's witnesses challenged the evacuation time estimates for several reasons: (1) Traffic will not flow at maximum capacity; (2) Police would not control traffic and traffic would stagnate; (3) evacuation times do not account for bus or ambulance trips; (4) the number of private vehicles is undercounted; and (5) shadow evacuation from outlying areas will cause traffic backup in the EPZ. (Plotkin/Pulido Testimony ff. Tr. 12580, p. 3-10; Tr. 12617-621) The witnesses consistently urged the most conservative assumptions, however, which the Board concludes are not credible. (Plotkin, Tr. 12599-600, 12604)

259. The purposes for evacuation time estimates are to identify transportation routes for which traffic control planning is needed and to provide time estimates which enable decision makers to choose between sheltering and evacuation as protective actions. (Sears

Testimony ff. Tr. 12638, p. 29-30) Extremely conservative assumptions do not serve these purposes. (Urbanik, Tr. 12389-400) The time estimates by T. R. C. Voorhees were realistically made over a range of normal and adverse conditions. These provide a range of estimates of evacuation times to decision makers. (Winslow, Tr. 12193-207; Urbanik, Tr. 12380) Applicant's and Staff's witnesses both conclude that police can control traffic. (Winslow, Tr. 12222; Urbanik, Tr. 12394) Accidents are considered in traffic flow estimates and they do not affect overall time estimates significantly. (Urbanik, Tr. 12381) The number of ambulance and bus trips required would be too small to impact overall evacuation times. (Urbanik, Tr. 12391-392) The number of vehicles involved in an evacuation is not undercounted since the estimate of 1.3 vehicles per household is consistent with recent studies. (Urbanik, Tr. 12383) Voluntary evacuation from outside the BEPZ will not cause traffic backups within the EPZ. (Winslow, Tr. 12779-80)

260. The Board has considered Joint Intervenors' assertions on public and emergency worker behavior in its analysis of Planning Standard b(1), b(2) and b(7) where we conclude that their proposed actions are not warranted. We conclude that time estimates for emergency evacuation of the public within the plume exposure EPZ are valid and in conformance with Appendix 4 of NUREG-0654. The Applicant has conformed to the onsite criteria of NUREG-0654 for protective actions. The Board therefore finds that adequate protective actions can be taken both on site and off site in the event of an emergency and

ments of 10 CFR 50.47 and criteria of Part J of NUREG-0654
met.
