UNITED STATES OF AMERICA

N' LEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of THE REGENTS OF THE UNIVERSITY OF CALIFORNIA (UCLA Research Reactor)	)	Docket No. 50-142 (Proposed Renewal of Facility License)

DECLARATION OF MIGUEL A. PULIDO

I, Miguel A. Pulido, do declare as follows:

1. I am a mechanical engineer employed by McCaughey & Smith Energy Associates, Consulting Engineers, Inc. I am also a member of the Executive Board of the Southern California Federation of Scientists. A statement of professional qualifications is attached hereto.

2. I have reviewed a number of matters regarding the UCLA reactor related to airflow, effluent dispersion, ventilation characteristics and interfaces, fire potential, and associated concerns. This review has consisted of (a) a detailed review of the available architectural, mechanical, electrical, plumbing, and HVAC (Heating, Ventilating, and Air Conditioning) drawings for the reactor building and the neighboring portions of Boelter Hall and the Math Sciences Building, (b) a detailed inspection of the interior of the Nuclear Energy Lab and associated areas, (c) several detailed inspections of the areas external to the Nuclear Energy Lab, and (d) a review of the relevant portions of the application, the Cort and Hawley reports, and certain other documents identified herein.

3. It is my conclusion, based upon the above review, that a reactor fire is a credible accident scenario for the UCLA facility, that interaction of building ventilation systems as well as the particular configuration of buildings surrounding the reactor facility could lead to greater public radiation exposures in case of accident than would be the case otherwise, and that the placement of the reactor exhaust stack upwind of a main air inlet for the Math Sciences building illustrates poor engineering judgement with respect to safety, particularly in conjunction with its short height relative to nearby structures. The bases for these and certain related conclusions are discussed below.

4. I have inspected the eighth floor roof above the reactor and the ninth floor roof of Math Sciences immediately adjacent. The area containing the reactor exhaust stack contains no effective physical restrictions to public access. I, for example, had no difficulty entering the area; beverage bottles and food wrappers indicated that others have likewise been present there. The area cannot be said to be of restricted access because there are no physical features which effectively restrict access.

5. I noted further that there are offices and other rooms immediately adjacent to the reactor stack area, with windows facing the area. Many of those windows, at the times of my visits, were open. Direct gamma radiation from the Argon-41 passing through the stack, as well as Argon-41 itself entering the rooms through the open windows, create public exposure

potentials. I note that the reactor stack is not made of concrete or brick, which might have some shielding effect, but rather of ordinary air duct (thin sheet) metal, which would have little if any shielding effect for the gamma radiation. Thus radiation exposures must be assessed not merely for those in the proximity of the exhaust plume, but also for those near the enclosed portions of the stack.

6. The exhaust stack sheet metal structure climbs up the side of Boelter Hall from the 3rd floor to the 8th, where it is joined with the stack from which the effluent is eventually emitted. It would thus appear that people with offices whose windows are right next to the stack as it rises to the eighth floor would be particularly exposed to the radiation emitted from the stack at those locations, even though the Argon-41 itself is contained within the stack until it reaches the roof. This is because of the penetrating nature of the gamma radiation emitted by the Argon-41. (See photograph #1, of Exhibit B, attached to Dr. Plotkin's declaration on behalf of CBG's motion for summary disposition as to the seismic matter, to see the proximity of offices to the stack on the 5th, 6th, and 7th floors).

7. The location of the large air inlet on the Math Sciences roof shows poor design, especially given the failure of the University to meet the standard engineering requirement that effluent stacks be substantially higher than surrounding buildings. Because the stack is lower than nearby Math Sciences, and because the accelerator nozzle has been removed, which further lowers its effective height, the prevailing winds direct the plume almost directly toward the air inlet for the Math Sciences Building. The prevailing winds come from the Pacific Ocean to the southwest, blowing toward the northeast, which, unfortunately leads to the air inlet.

8. My review of the architectural and other drawings indicates that the reactor was originally constructed in a two-story building and that over the years construction was added on top and to the sides. The available drawings give no indication that the problems with the exhaust stack-air inlet interface were recognized in the building modification. This is a good example of why careful engineering review should be required of any modification, because safety problems often arise when such a thorough review process is not performed. (I note that the May 1968 AEC inspection report, in which the AEC inspector noted some of the new construction, indicates that the University did not obtain prior approval from the AEC, as required by the license, for the new construction. However, there is no discussion in the inspection report of the effect the additions had on the exhaust stack and nearby air inlet; that was not discovered by inspectors for another seven years, and apparently escaped the NEL safety review process as well.)

9. The construction additions had a significant potential for contributing to increased risks to the public. The new construction provided new pathways for public exposure to radiation, so that higher public doses resulted, and so that far more people were exposed. The initial reactor facility, as initially licensed, had a buffer zone around it that permitted dispersion of effluents before reaching the public; the new construction eliminated any such buffer and provided a system which amounts to recycling of radioactive effluents back into the ventilation system of a building containing very many people. Thus, the new construction increased doses to the public during normal operations. As shall be indicated later, it also increased substantially the potential consequences of an accident involving release

of radioactivity.

10. In addition to exacerbating the Argon-41 problems, the new construction substantially increased the potential for public exposure to direct gamma and neutron shine from the reactor itself. As mentioned above, the reactor was originally designed to be in its own two-story building. No one was to be above the reactor room, so exposures in the vertical direction were not of concern. (For example, the application at page III/4-1 indicates that the interior wall separating the reactor highbay from the rest of the building is 18-inch-thick concrete, whereas the roof of the reactor highbay is 6 inches thick. The shielding within the reactor itself is likewise less protective on top than on the sides, in part because core entry is through the top.) Furthermore, the original design power was 10 kw, so the reactor facility itself was apparently designed to shield a 10 kw reactor with no potential public exposures on the floors above. But now power is ten times greater, and three floors of classrooms and offices have been added above the reactor itself. The void area just above the reactor is locked and supposedly interlocked so that maintenance people can't be exposed, even briefly, while the reactor is operating below, but there is no such protection for the people who are in rooms above. Furthermore, the Engineering Snack Bar is now on the third floor above the reactor facility, on the other side of a wall from the void area which is locked for radiation protection purposes. Yet, of course, the Snack Bar is not closed and locked when the reactor is operating as is the room on the other side of the wall.

11. An additional concern is readily apparent by viewing the architectural and HVAC drawings for the third floor "void area" or machine room. That area contains the ventilation system for the reactor facility. Air ducts penetrate the reactor room ceiling so that the ventilation equipment above can provide air to the rooms below. The air duct penetrations provide a number of openings in the concrete shield above the reactor. Whereas the six inches of concrete will somewhat reduce gamma and neutron "shine" through the ceiling, though obviously not enough to make it safe for people to be in that area for even short periods of time while the reactor is operating, the air ducts provide avenues for radiation "shine" without any of the attenuation normally offered by the concrete. This didn't matter when the reactor was first licensed and the building designed, because no one was ever to be above the reactor, except maintenance people for brief intervals. But given the relatively thin concrete floor and the penetrations in it, the new construction and the tenfold increase in power produced new conditions requiring a new assessment of the possible threat to the health and safety of the people who take classes, work in offices, and eat in the snack bar above the reactor.

12. An additional observation about the machine room above the reactor: As mentioned above, it contains numerous water sources and piping systems. These pose the potential of leaking directly onto the reactor below, creating an avenue for flooding of the reactor from a pipe break above. I note that these pipes have leaked in the past, flooding the reactor facility and damaging the control panel and related reactor instrumentation. The events reported* to have surrounded that incident-- detection of the leak on a Friday, but failure to repair the leak until Monday when the control console damage was discovered, in part because of lack of knowledge as to how to undertake the repairs and in part because of a failure of communication

---

*UCLA Daily Bruin, 11/21/79, reproduced at page VII-4 of CBG Supplemental Contentions to Petition for Leave to Intervene and failure to follow-up-- if true, indicate to me a substantial inability to take the necessary protective actions to prevent damage to the reactor and potentially the public. I would add further that the placement of plumbing systems above the reactor seems a poor choice from a safety standpoint.

13. Within the reactor facility, I spent considerable time viewing potential effluent pathways in case of accident involving release of radioactive material. I was not permitted to complete my inspection of such pathways because of objections by UCLA, and thus have not been able to complete my analysis of such pathways in case of accident. I understand, however, that the licensing board has indicated that if it requires a more detailed analysis, I will be permitted to complete the inspection. In any case, some preliminary observations can be made at this point.

14. Dispersion of radioactive material during an accident at the facility is complicated by the new construction that has occurred at the facility. In most analyses of radioactive dispersion, a building or perhaps a cluster of buildings is assumed with dispersion being over open country. Detailed models have been developed for these conditions. But the UCLA case is far more intricate, because it is, in addition to being urban-sited instead of open country, situated <u>within</u> an unrestricted building complex containing several thousand members of the public. Dispersion in case of accident, thus, will not be solely from traditional forms of dilution of plume outside the building as transported by the wind, but also <u>within</u> the building, transported by the ventilation system. The ventilation system provides a complex mechanism for bringing radioactive material to where the prople are, and recirculating that contaminated air. Whereas once the plume has passed an individual outdoors, the exposure is ended, a contamination incident involving transport via a ventillation system indoors would create the potential for substantially higher exposures to larger numbers of people, as the material would be largely trapped inside the building for an extended period of time. And whereas it may not be very likely that an individual would remain in the same location outdoors for several hours of exposure to a plume, the situation for hundreds or thousands of faculty, staff, and students in classrooms and offices is quite different, keeping in mind the invisible nature of most airborne nuclear material and UCLA's policy of <u>not</u> evacuating or providing any other emergency response outside of the reactor room itself. As Dr. Theodore Taylor indicates in his book <u>Nuclear Theft</u>, the relevant portions of which are attached to his declaration, dispersal of plutonium within an office building through the ventilation system would be far more hazardous than dispersal outdoors. This would tend to be true for other radioactive materials as well. Thus, the additional construction that has occurred around the UCLA reactor, and the interface of ventilation systems inside those buildings considerably increases the potential magnitude of public radiation exposures in case of accident.

15. Consider, for example, the corridors outside the Nuclear Energy Lab. These could rapidly fill up with radioactive effluent from an accident, but unlike release into open air outdoors, the release would be bounded virtually on all sides, considerably reducing dispersion. Concentrations would be high,

and would remain elevated for extended periods of time. The full detailed analysis would be quite complex, because release into certain areas (like the corridor on the first floor) would produce high exposures there but restrict release to other parts of the building because that corridor has only one airvent, which provides air to the corridor. Release to other areas would reduce maximum individual dose, but vastly increase the population dose. Suffice it to say that traditional accident dispersion models may not be appropriately conservative for the UCLA case and would likely underestimate by significant factors at least certain components of the accident consequences.

16. The particular situation near the UCLA reactor also tends to make most dispersion models of questionable conservatism for modeling the out-of-doors response as well. One of the most likely effluent pathways in case of accident is the single door separating the reactor room from the loading zone between Engineering Unit B and the reactor building. It is a single barrier consisting of an ordinary door. But to assume normal dispersion from that point of leakage would be non-conservative from a safety standpoint, because that immediate area is essentially a wind-protected cove, with tall walls on three sides restricting dispersion. The effluent could collect in that sheltered walled-in public area, elevating concentrations and elongating exposures, before eventually dispersing elsewhere.

17. Thus, both the interior and exterior conditions peculiar to the UCLA reactor case are likely to produce accident consequences considerably greater than would be the case were there not so much populated construction immediately surrounding the reactor facility. Maximum exposures, particularly indoors, could be significantly elevated because of the build-up effect and longer exposures. Over-all consequences are likely to be exacerbated by these site characteristics.

18. I have reviewed the arguments presented by both UCLA and the NRC Staff and its consultants as to the credibility of a reactor fire at the UCLA facility. I find none of the arguments against the credibility of such an event compelling. In fact, the analysis included in the Hawley report leads me to the conclusion that there are numerous credible fire scenarios.

19. The primary materials of the reactor (graphite, uranium metal, magnesium, and so on) are combustible. The reactor is not sealed; it is essentially a pile of graphite and concrete blocks with numerous penetrations for control blades, piping, and the like. The core is diffused with air; otherwise there would be no Argon-41 problem from the activation of normal Argon in air. And the air within the core can readily be transported in and out of the core; again, if this were not the case, there would be no Argon-41 problem. Fires can occur in such graphite pile type reactors-- witness the Windscale reactor fire, which occurred with the ventilation shut down. Modern graphite reactors are generally contained inside a leak-tight vessel in an inert atmosphere to prevent fire. The UCLA reactor has no reactor vessel, isn't inerted, and has no containment. Fire is certainly credible.

20. The principal argument of the NRC Staff against a reactor fire being credible is the assertion that periodic inspections would prevent hazardous conditions likely to lead to fire from ever occuring (SER 9-2) and that fire extinguishers are available to fight small fires, with the Fire Dept. having been familiarized with the facility in order to fight larger fires. A few comments regarding those assertions: During my inspection of the NEL facility, I noticed numerous instances of unsafe fire conditions. One room, a laboratory right next to the reactor room, was piled high with paper and other flammables. The fire extinguisher was stuck in a corner behind formidable barriers of flammable materials, essentially making it unreachable in time of need. Other fire extinguishers were missing from their required locations; another fire extinguisher was completely depleted and had additionally not been inspected at the interval required. (Most of these fire extinguishers, by the way, were CO_2).

21. The principal argument of UCLA against a reactor fire occuring is that the asserted measured airflow out of the core extract line is claimed to be 50 cubic feet per hour. UCLA thus argues that insufficient air is present for a fire, once started, to be sustained. First of all, I note that UCLA contradicts itself in several places as to the actual flow rate out of the core extract line; rates many times the 50 CFH cited are cited elsewhere. Secondly, it is simply incorrect to assert that the air flow rate in and out of the entire core is identical to the flow rate in the small diameter core extract pipe. If that were true, one would merely have to seal off the core extract line and there would be no Argon-41 emission; the radioactive material would decay away within the core and not need to be exhausted out the reactor stack. The core is full of air, and that air passes in and out of the core through the many interstices in the graphite blocks and the cracks in the shield blocks and the numerous other passageways. A measured flowrate in a small line is irrelevant to the flowrate in and out of an unsealed core.

22. Lastly, and most importantly, the measured flowrate during non-fire situations is completely irrelevant to the flowrate that would occur during a fire. Fires are self-feeding-- they create convection currents that draw in and exhaust air. If this were not so, and the UCLA assumption were correct, no fire could ever occur unless a mechanical ventilation system were feeding the fire with air. No house with closed windows could ever catch fire inside, if the UCLA assumption were correct, because the measured flow rate inside was low. One does not need to provide a fire with air: it provides itself. The airflow rate into a gas water heater is essentially zero when it is off; once the gas is ignited, however, the natural convection currents created by the released heat provide the necessary airflow. And so it would be with the UCLA reactor.

23. I understand that the NRC Staff has asserted that a graphite fire in the UCLA reactor would occur only if an experiment failed <u>and</u> a general building fire occurred <u>and</u> the reactor's graphite blocks were exposed to a free flow of air. The Staff cites pp. 41-43 of the Hawley report. We must not be reading the same report. Page 41 refers to a credible scenario in which a building fire occurred while the shield blocks were removed; there is no mention of the necessity of a failed experiment as well. Credible common-mode causation is suggested by the authors.

24. Page 42 describes a credible accident scenario caused by a failed experiment alone. The bottom of p. 42 continuing onto p. 43 describes another credible scenario, a simple building fire while the shield blocks were removed. The Staff appears to have misread its consultants' report.

25. I note that the Hawley report presents what are to me a whole range of credible fire scenarios-- welding torch igniting outer graphite; power excursion sufficient to ignite a flammable solvent (a common mode scenario for this event would be a power excursion caused by breakage of the sample container in which a large sample dissolved in solvent is being irradiated; removal of the neutron-absorbing material from the core could initiate the power excursion which, even though perhaps insufficient to melt the fuel itself or ignite the graphite, could ignite the solvent with its lower flash point); nuclear heating of inserted materials "to a temperature high enough to ignite various flammable substances seems well within the realm of possibility"; and so on. The report indicates that a number of these scenarios could put the fuel at risk, if proper and prompt response was not made to suppress the fire. The report also indicates that because graphite produces little smoke when it burns, the fire might go unnoticed for substantial periods of time. I note in the emergency plan no procedure for actually fighting a reactor fire. Given these factors, a reactor fire appears to me not only credible to begin, but credible to put the fuel at risk. Certainly neither the arguments of the Staff nor the Applicant seem to me sufficient to indicate that such a fire could not credibly occur; fires are common occurrences. The airflow argument seems to me spurious. Even if airflow were substantially restricted, that could well merely slow the rate of reaction rather than prevent it. The airflow produces two opposing effects-- it provides oxygen and removes heat. Restricted airflow will reduce heat loss, which can help to sustain the fire. There are obviously lower limits to airflow capable of sustaining the fire, but with the convection currents produced and the lack of a sealed structure, I have seen no evidence that those lower limits are approached for the reactor. (Furthermore, numerous scenarios are credible involving the exposed graphite with a ready source of air-- insertion of experimental apparatus into the core, welding near the thermal column, etc.)

26. In short, fire appears a very credible accident at the UCLA reactor.

27. Because of the credibility of accidents such as fire, and because of the adverse consequences associated with the unfavorable site characteristics described earlier, it is my opinion that the lack of certain engineered safety features such as containment structure, emergency radioactivity removal systems and holdup tanks substantially increases the risk to public health and safety.

28. The reactor room in no way represents either a confinement or a containment structure. There are numerous penetrations into the room (quite a few doorways, in particular) which leak air at a significant rate. One can put one's hands near the doors and feel a strong draft because of the negative pressure of the reactor room*; in an accident, with the ventilation system shut down

* I note however that other doors at other times have had a draft in the other direction, indicating possible problems in maintaining proper air balance. In any case, my examination has revealed large air pathways in, under, and around several doors in the reactor room.

as required, the air would flow through the same passages into the environment. The reactor room itself represents essentially no barrier to release of fission products; such a barrier is essential, given the population on the other side of the wall and the significant potential for accident.

29. Furthermore, reactor room air is essentially unfiltered prior to release. Ordinary air filters are used in the reactor exhaust stack, which would be of little use in preventing radioactivity from being released. After comments from NRC inspectors and the CBG contentions about High Efficiency Particulate Air (HEPA) filters, UCLA appears to have purchased such filters, but at least as of the time of my site visit, they were sitting uninstalled on a shelf. In addition, they were of small size, indicating intended use was not in the exhaust stack, which is much larger. Given the history of calibration problems with the exhaust stack monitor and the recent Application Amendment eliminating the safety high level radiation monitor as a back-up to the stack monitor, an essentially unfiltered exhaust system seems poor practice from a safety standpoint.

30. I note also that the Argon-41 stack monitoring seems of poor design: a sample line must bring effluent from the 8th floor down to a monitor in the reactor facility on the first or second floor. In the past, leaks in the sample line have led to underestimating of actual concentrations (Radiation Use Committee Minutes, December 15, 1980).

31. During my site visit and my review of the relevant documents describing the facility, the absence of systems designed to remove and hold radioactivity released during an accident was apparent. Although the facility has a delay tank for normal liquid effluent and a dump tank for normal storage of the coolant, this would be insufficient for dealing with emergency releases. Likewise there are no engineered features to remove airborne effluents in case of accident. Whatever would get out of the fuel in case of accident would be available for release to the environment without mitigating measures possible. Given the fire potential and also the credibility of other accidents which could involve fission product release, as indicated for example in Dr. Kaku's declaration, systems to remove and hold radioactivity released in such an emergency are necessary to at least mitigate the consequences.

32. I understand that it has been asserted that the inadequacy of the secondary coolant radiation monitor is not of safety significance because the secondary system would leak into the primary due to the static head differential. This is not completely correct. The <u>flow</u> of coolant would tend to go in the direction of lower hydrostatic pressure only as long as this pressure differential was maintained. Radioactive materials dissolved in the coolant would tend to go in the direction of lower osmotic pressure. As soon as pressures equalized, mass flow between the secondary and primary systems would stop, but radioactive materials would continue to travel in the direction of lower osmotic pressure, i.e., from the primary to the secondary. In addition, CBG has alleged problems developed at another University Argonaut reactor because of pressure drops in the secondary coolant system due to its being tied in to the normal

water system for the school. Contrary to the assertion made by the NRC Staff that the secondary systems are site specific, the UCLA Application at p. III/5-8 indicates that UCLA's secondary system is likewise tied in to the regular water system. Pressure fluctuations thus induced by other users of the system can result in fluctuations in leakage pattern in case of fission product release. And lastly, under accident situations, the pressure in the primary system may rise substantially above that in the secondary system. But as indicated above, osmotic mixing would still transfer contaminant from the primary to the secondary system in case of leak. Failure to adequately monitor such an effluent therefore is not excusable from a safety standpoint.

33. I understand that there is also some dispute about requirements to maintain the exhaust system during normal operations at a level that is capable of diluting the effluent with 14,000 cubic feet per minute of air. The University was cited by the NRC in the mid-1970's for having failed for a number of years to dilute the effluent to the required level. This was due in part to lack of capacity of the exhaust fans. The proposed technical specifications at first merely indicated that the system should have the capacity to dilute to 14,000CFM. Now I understand the language has been changed to say the effluent will be diluted to 14,000 CFM. However no surveillance system exists to check it. An air balance test needs to be conducted at regular intervals to maintain the dilution at that level, and to assure proper air flow in other areas. Failure to conduct such routine surveillance led to the previous violation which had, and would have if repeated, safety significance in substantially increasing the concentration of radioactive effluents feleased to unrestricted areas. The proposed changes are significant from a safety standpoint and unless strict surveillance is required and conducted, reasonable assurance cannot be provided that public safety will not be further threatened by increased concentrations of effluent due to failure to dilute the effluent sufficiently.

34. Furthermore, it is clear that the concentrations and radiation exposures during normal operations can be readily and substantially reduced by changes to the ventilation system. Raising the exhaust stack, even the twenty or so feet initially promised by the University and required by the original Technical Specifications, would have a substantial salutory effect as concentrations on the Math Sciences-Boelter Hall roof would be substantially reduced, particularly around the air inlet of concern. Raising the exhaust stack to the normal height required of such stacks would produce even greater benefits. Most importantly, moving the air inlet and increasing the fan capacity so that the accelerator nozzle can be put back on would be useful. The air inlet in particular is very poorly placed and poses substantial and unnecessary public safety risks.

35. In conclusion, I consider that a reactor fire is a credible accident scenario for the UCLA facility; that existing ventilation systems surrounding the reactor facility could lead to public exposures to radioactivity; that additions to the original building require a new assessment of potential dangers to the public; that the reactor is essentially uncontained and unsealed; that the stack monitoring system design seems poor; that the secondary coolant radiation detection system needs to be functional and accurate; and that to assure proper exhaust stack diluting and proper system air flow, routine air balance tests must be conducted.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Miguel A. Pulido

Miguel A. Pulido

Executed at Fullerton, California, this 9th day of January, 1983

Statement of Professional Qualifications

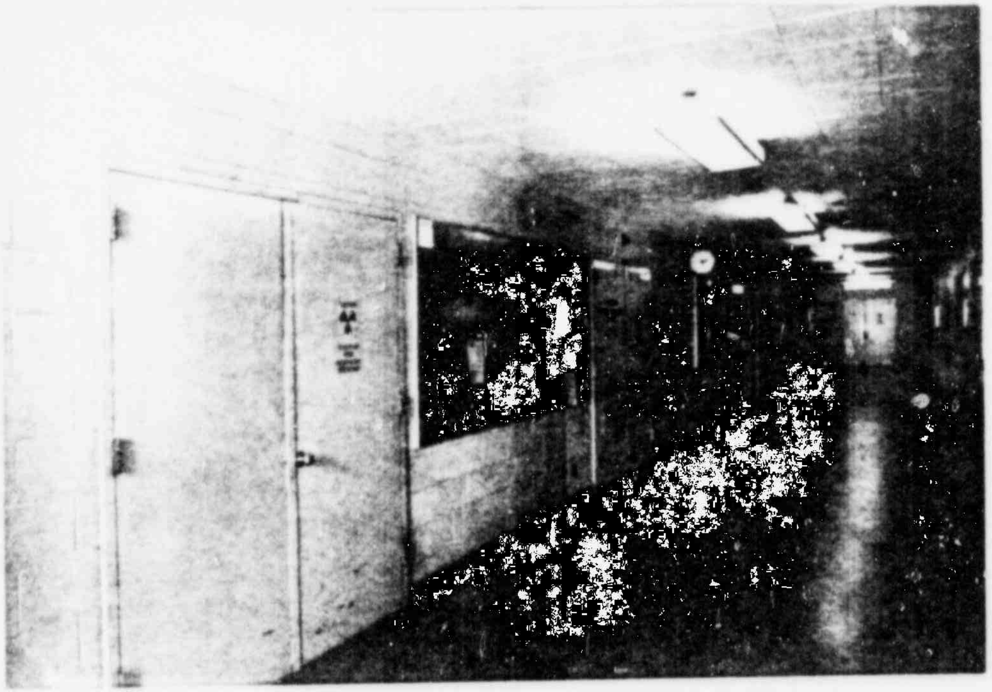
MIGUEL A. PULIDO

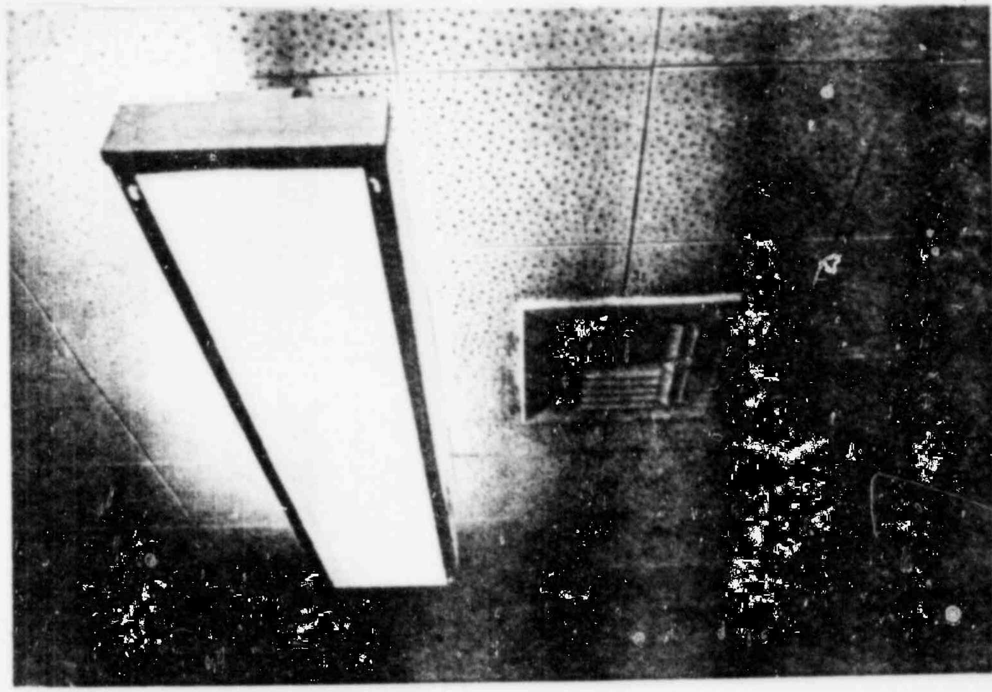
My name is Miguel A. Pulido. I am an engineer employed by McCaughey and Smith Energy Associates, Consulting Engineers, Inc. My work at McCaughey and Smith entails work with energy systems; heating, ventilating, and air conditioning systems; estimating leak rates from buildings and other structures; air flow matters generally; and other related aspects of mechanical engineering.

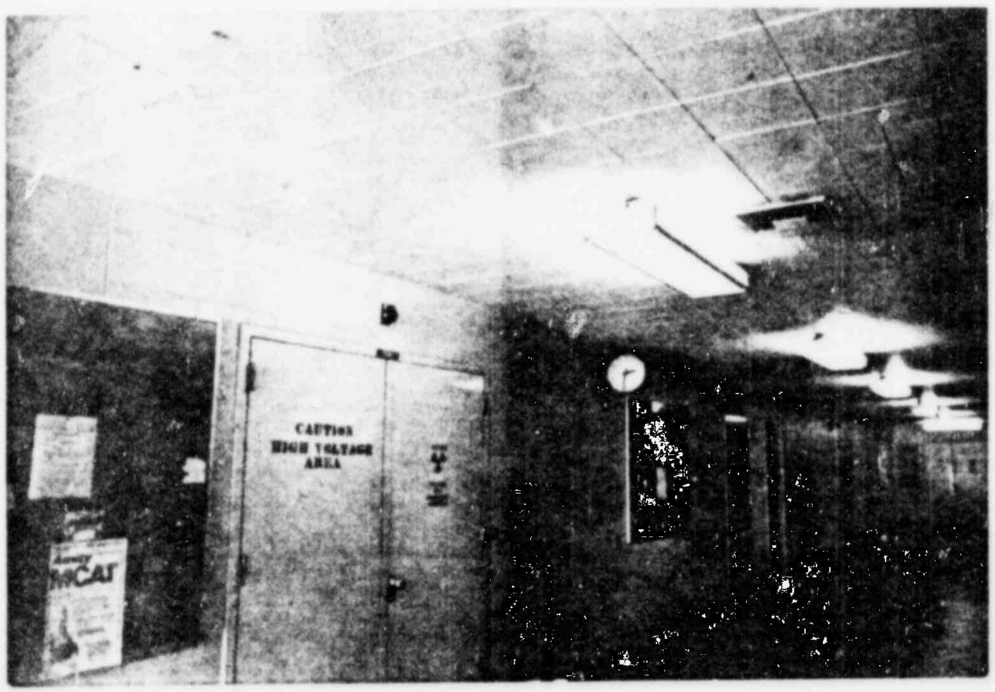
I received my Bachelor of Science degree in Engineering, with a specialty in Mechanical Engineering and a subspecialty in Energy Engineering, from California State University at Fullerton in 1980.

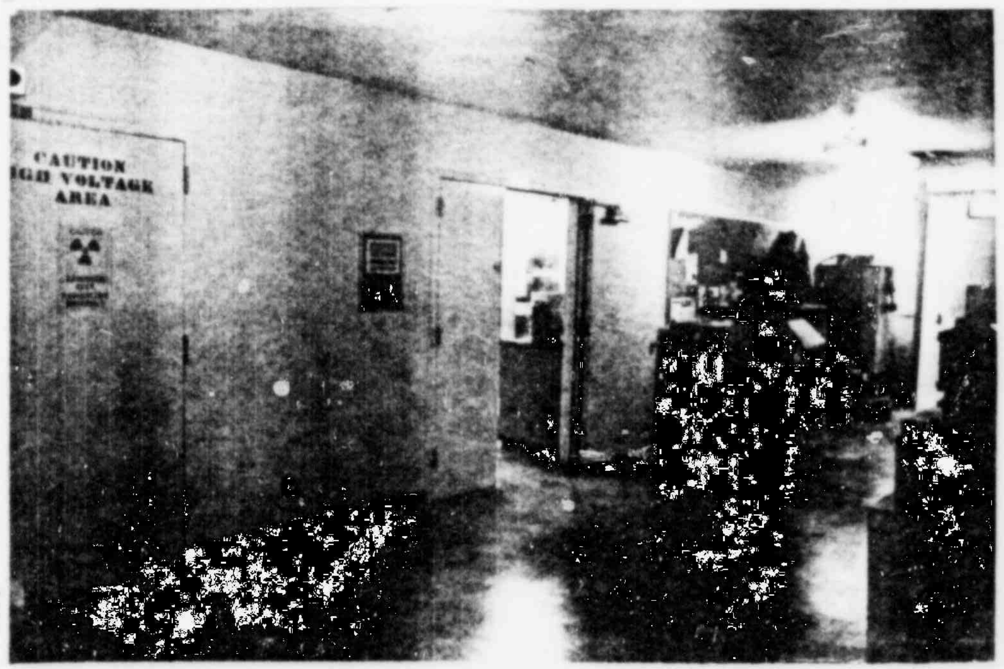
I am an Associate Member of the American Society of Heating, Refrigeration, and Airconditioning Engineers (ASHRAE) and of the American Society of Mechanical Engineers (ASME). I am a Member of the Association of Energy Engineers.

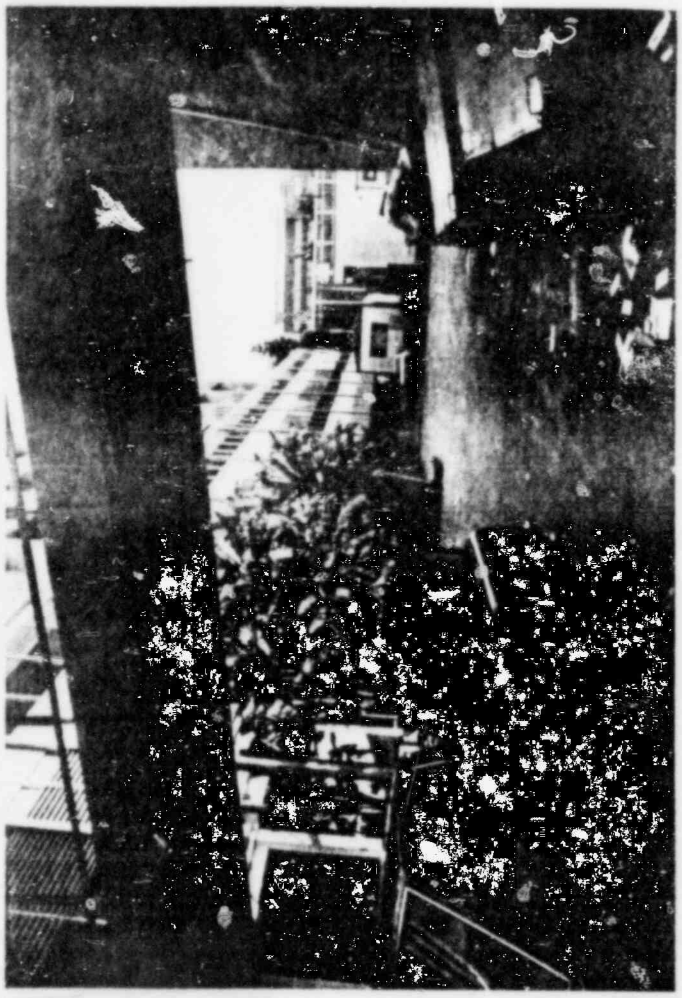
I am also a member of the Executive Board of the Southern California Federation of Scientists.

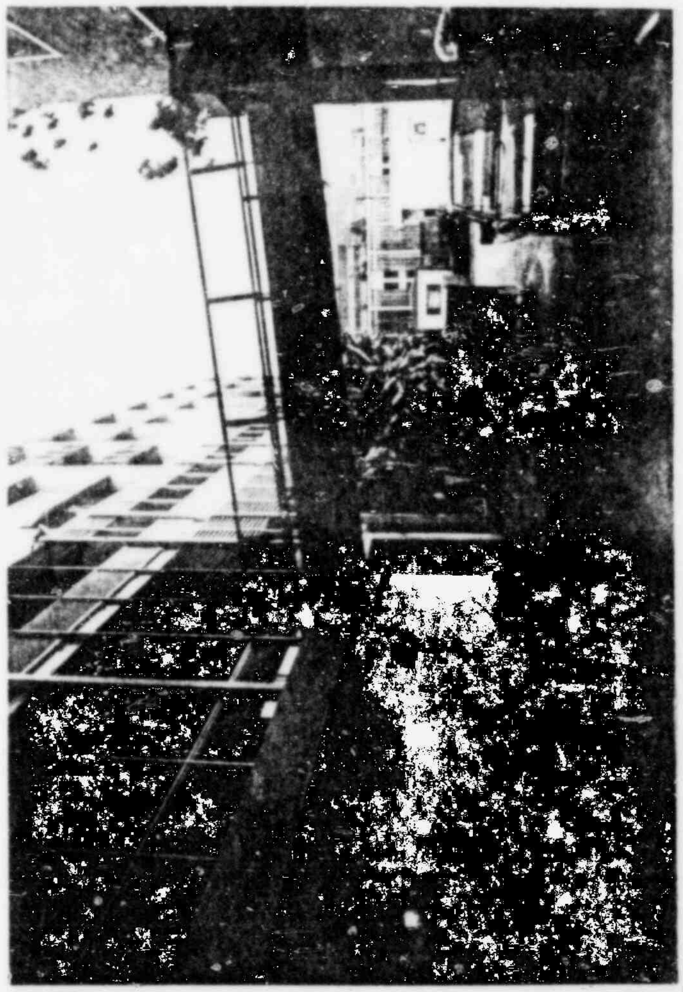


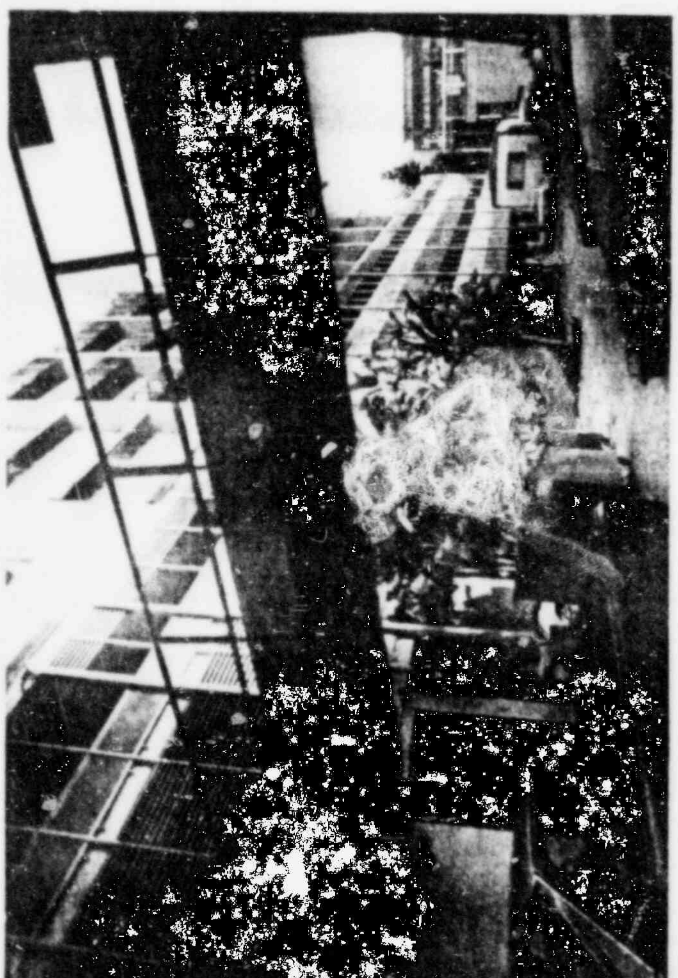


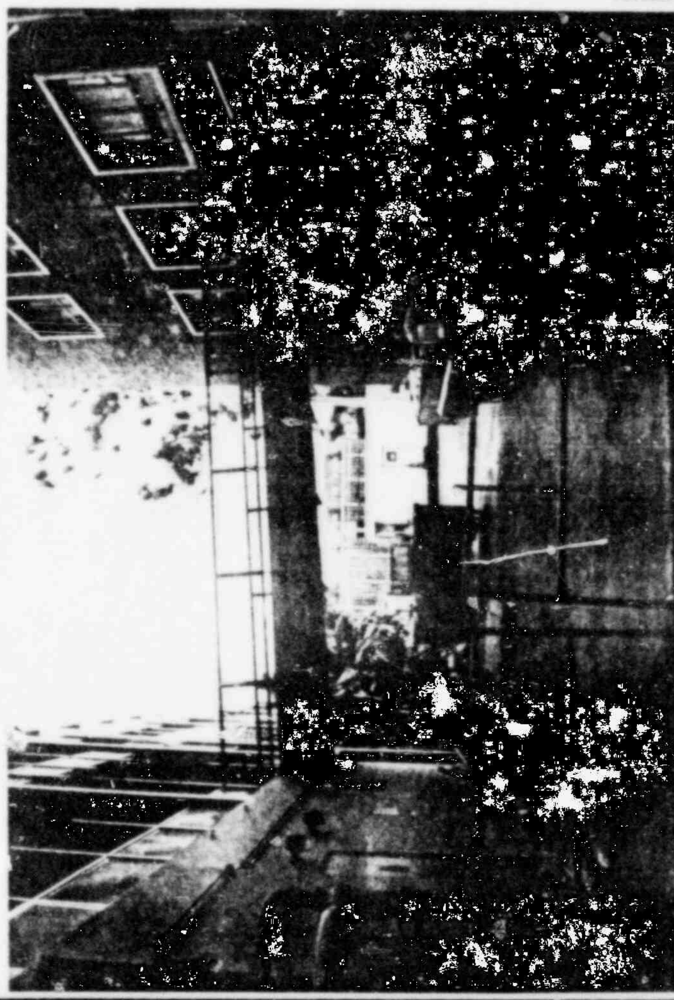

CAUTION
HIGH VOLTAGE
AREA

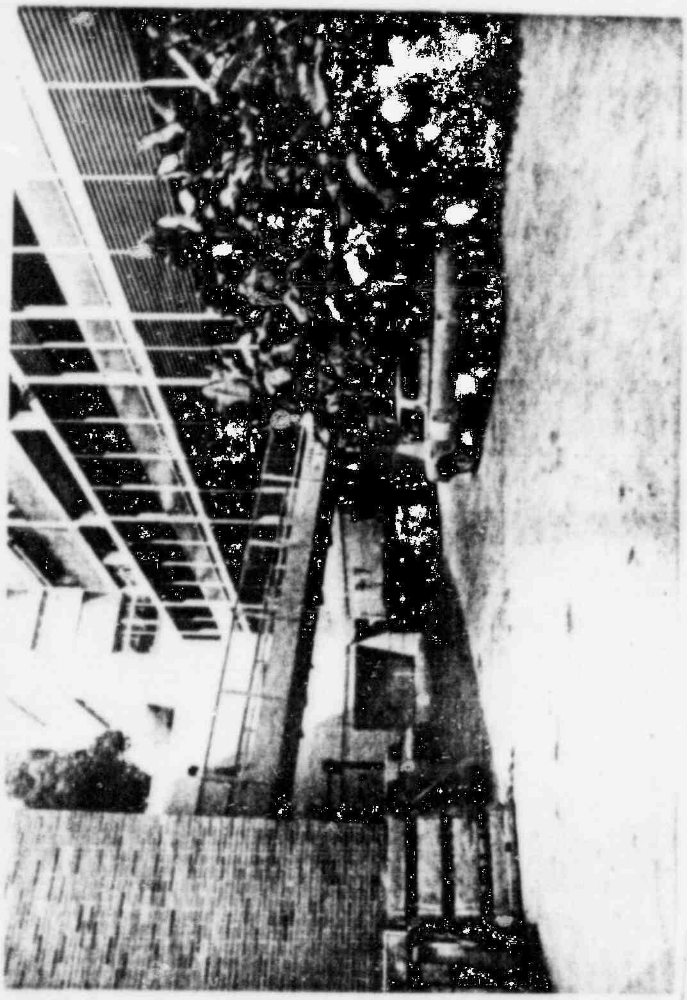
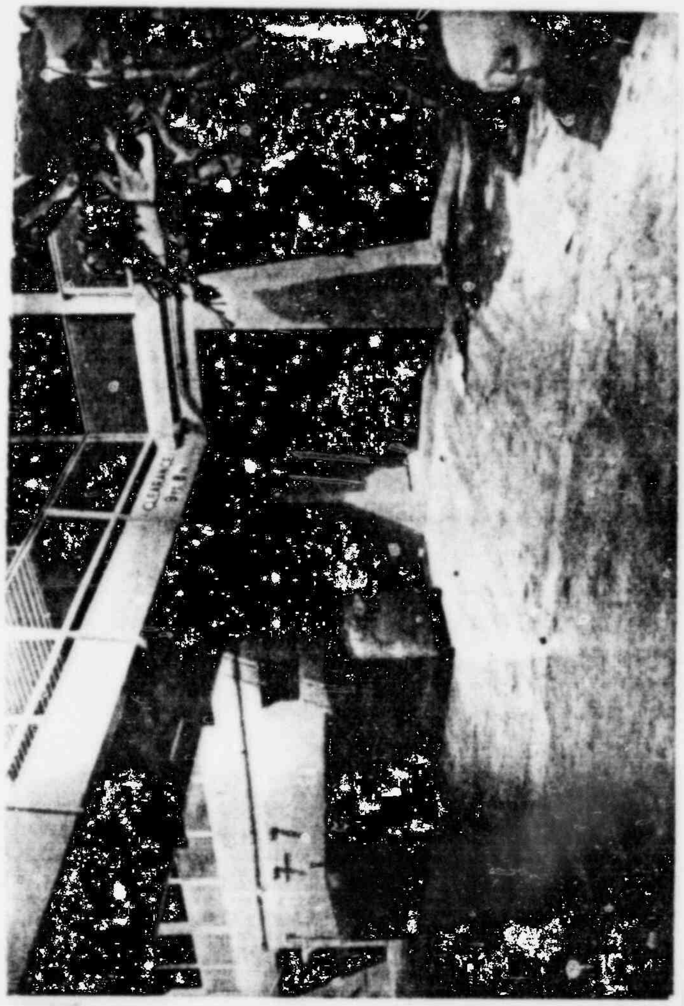

CAUTION
HIGH VOLTAGE
AREA

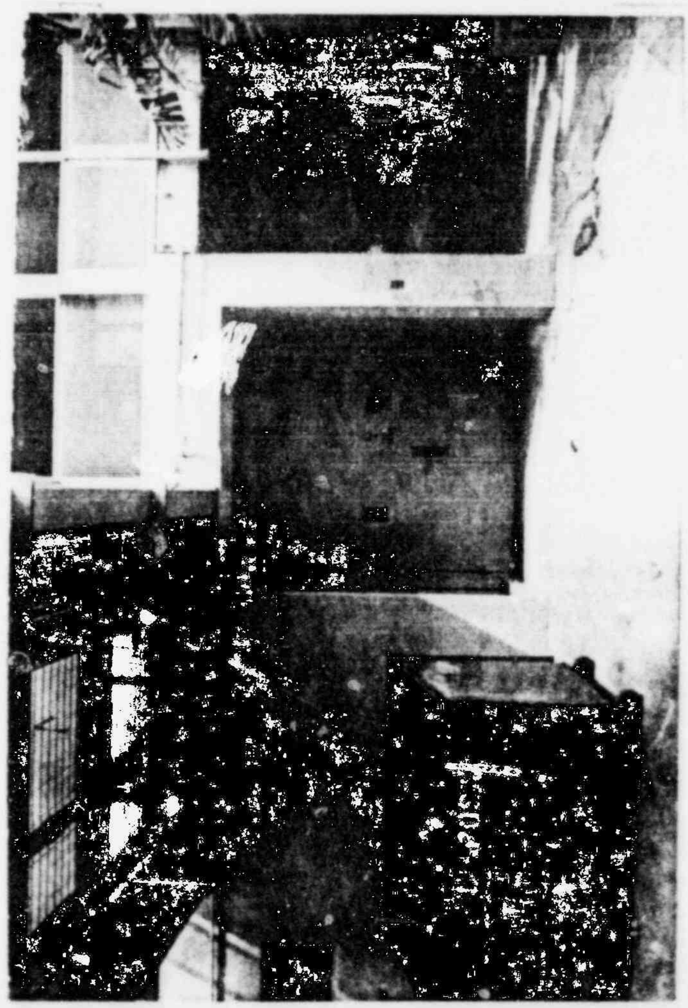


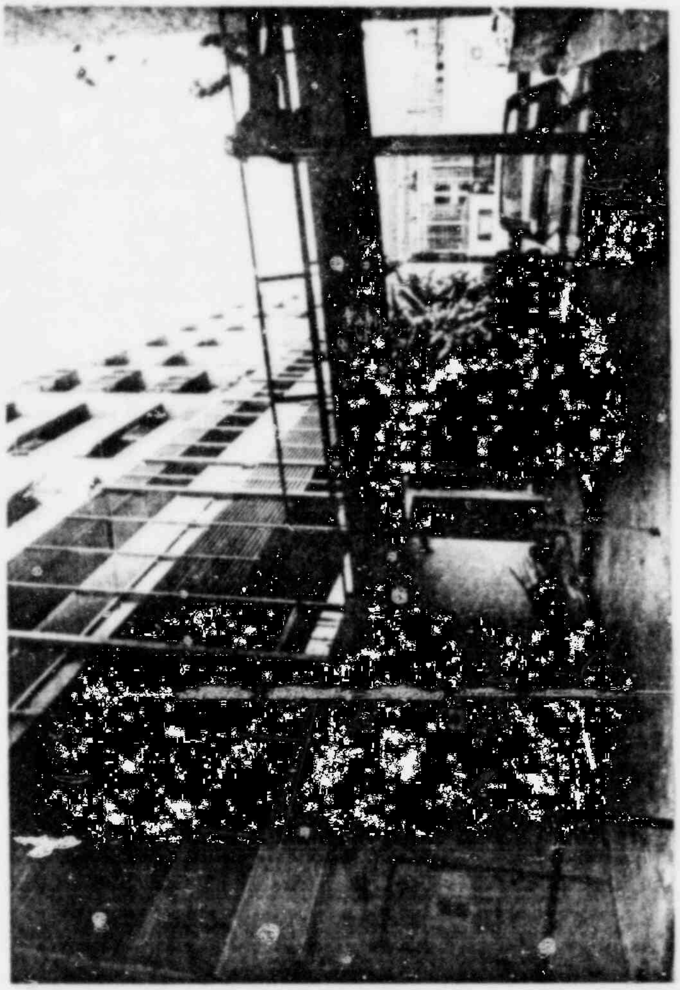
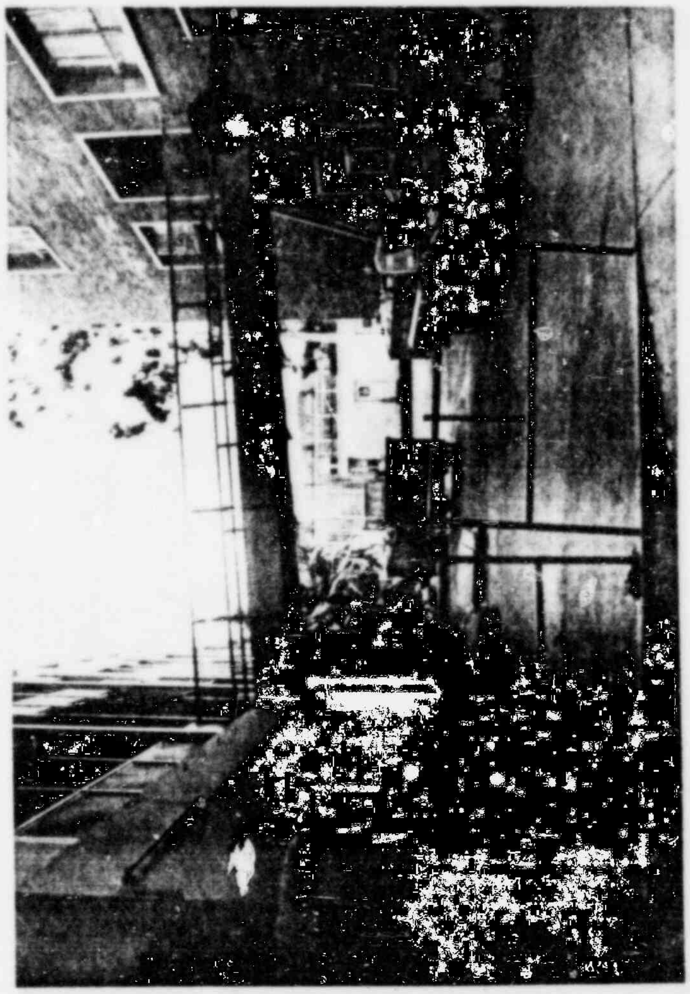
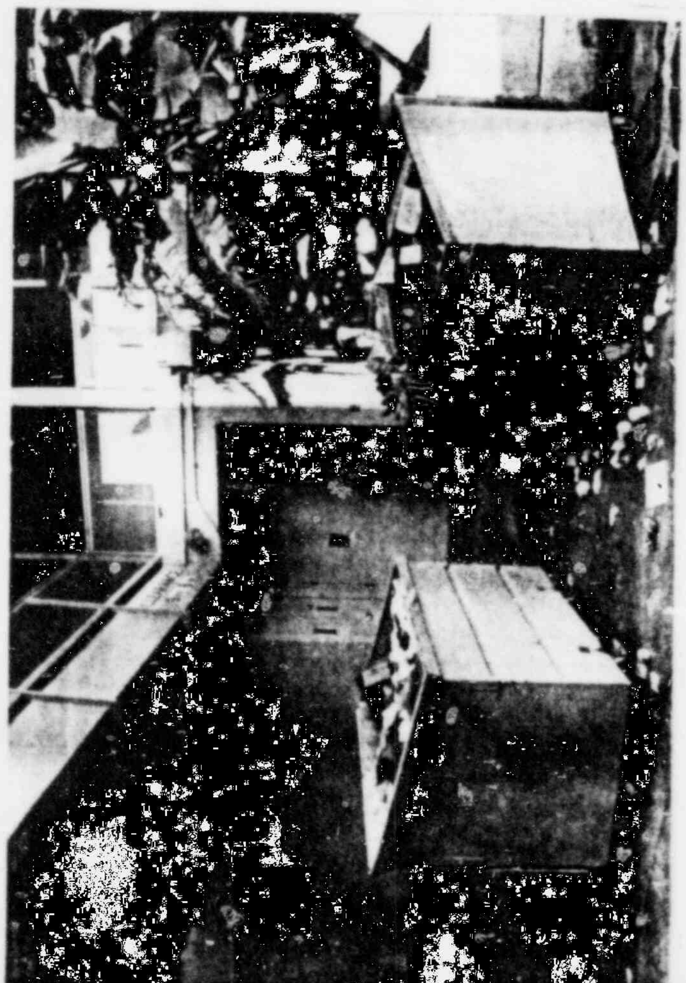
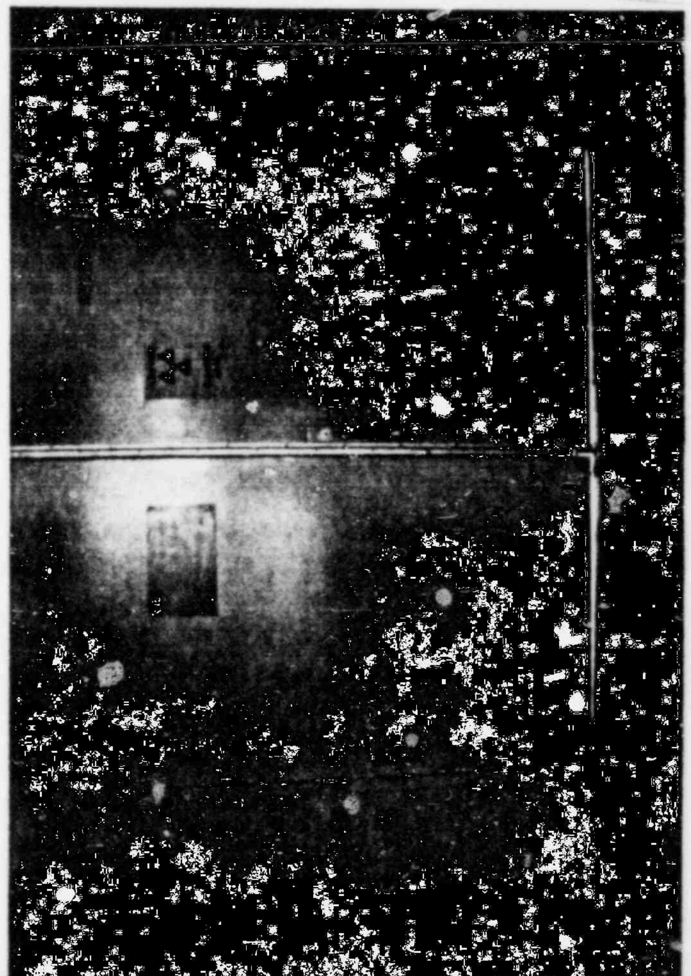


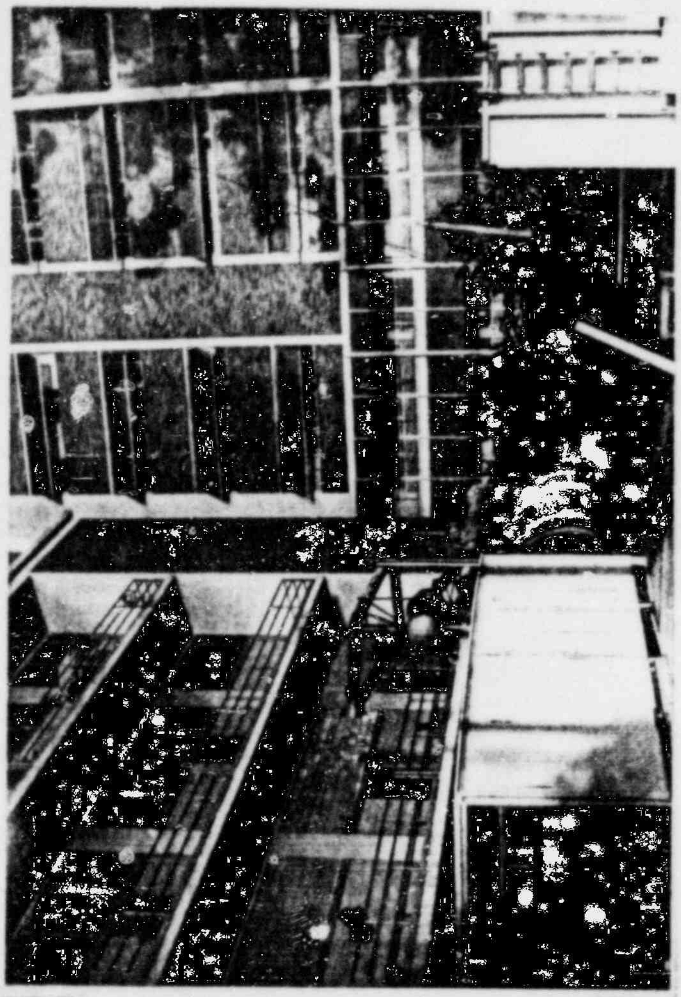
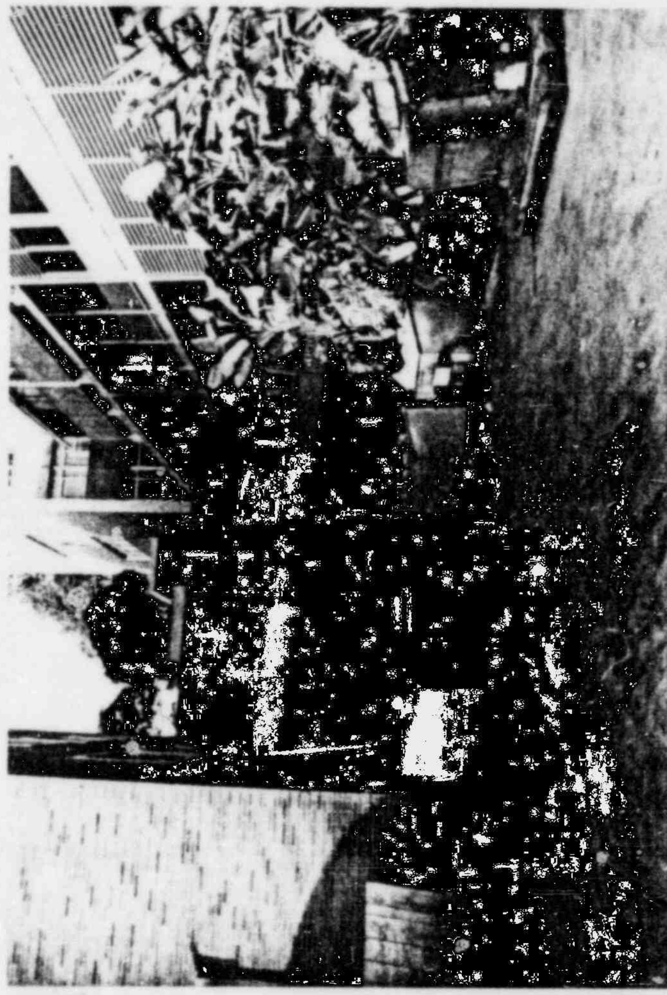
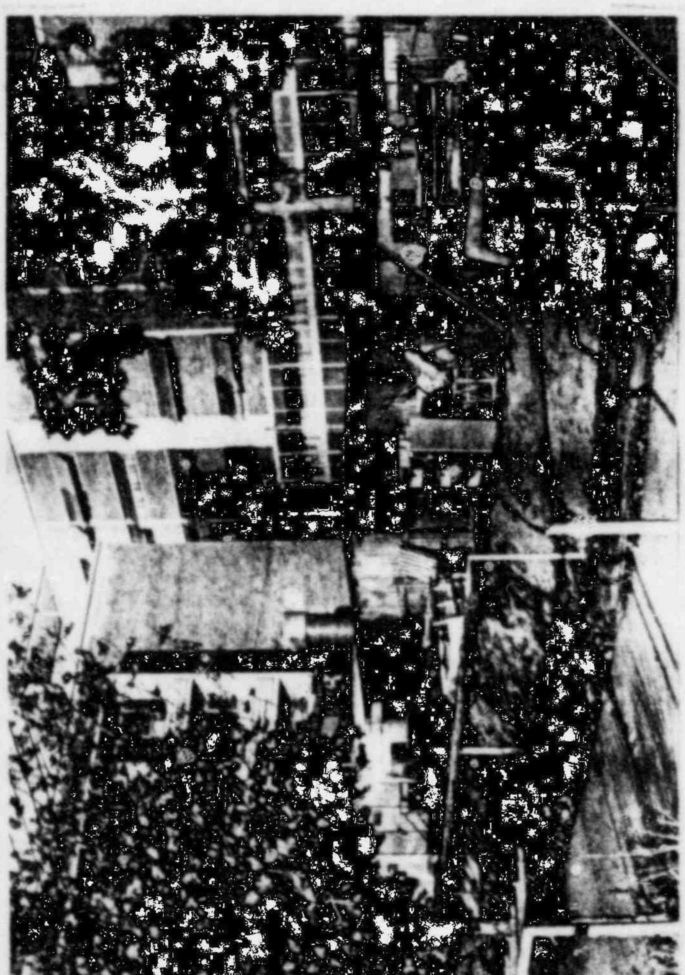
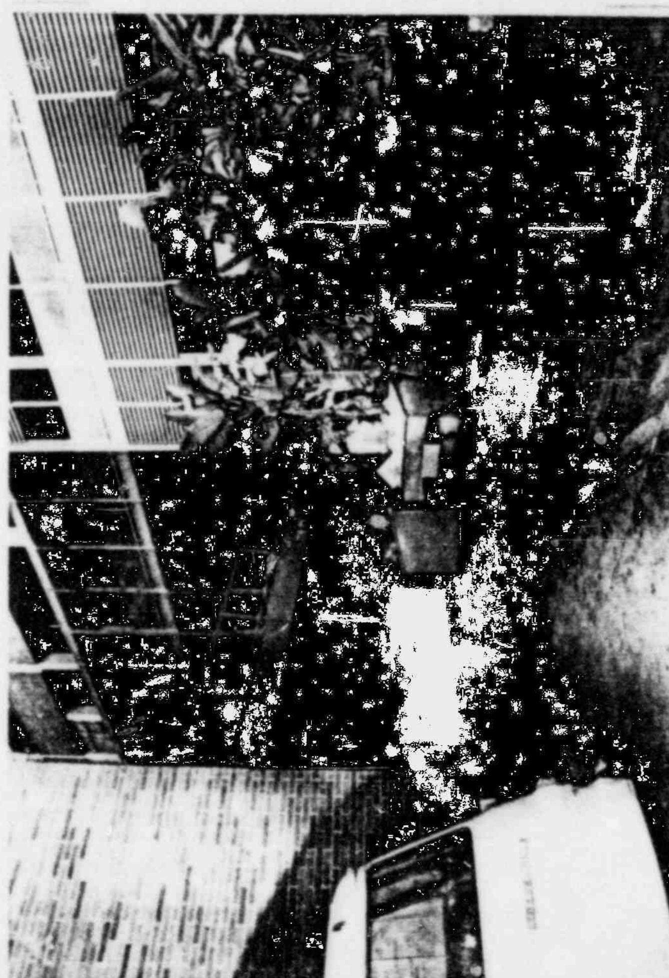


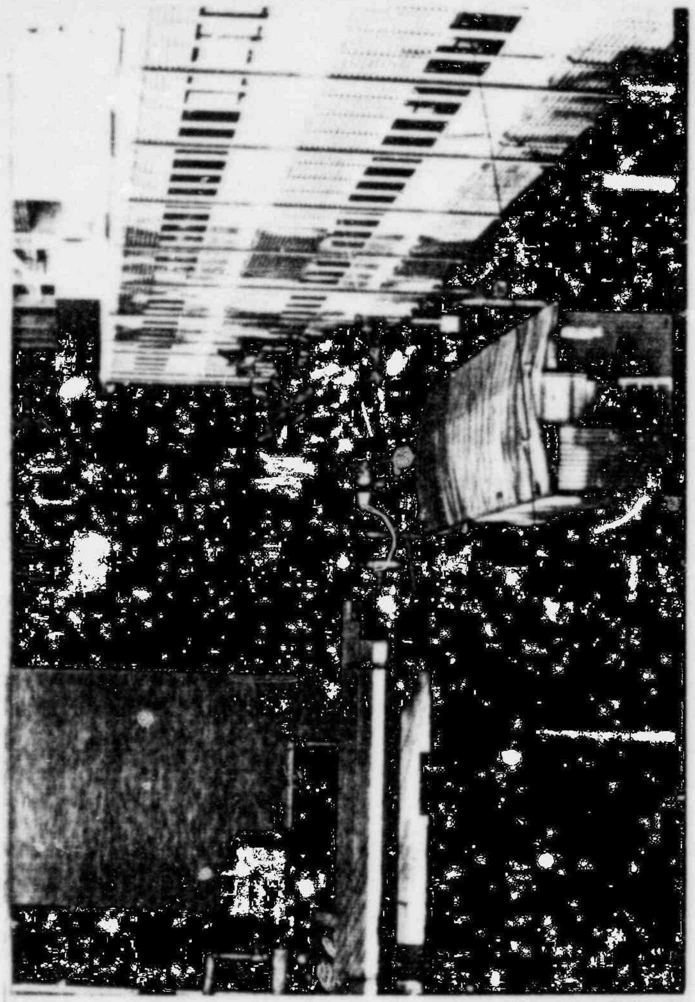
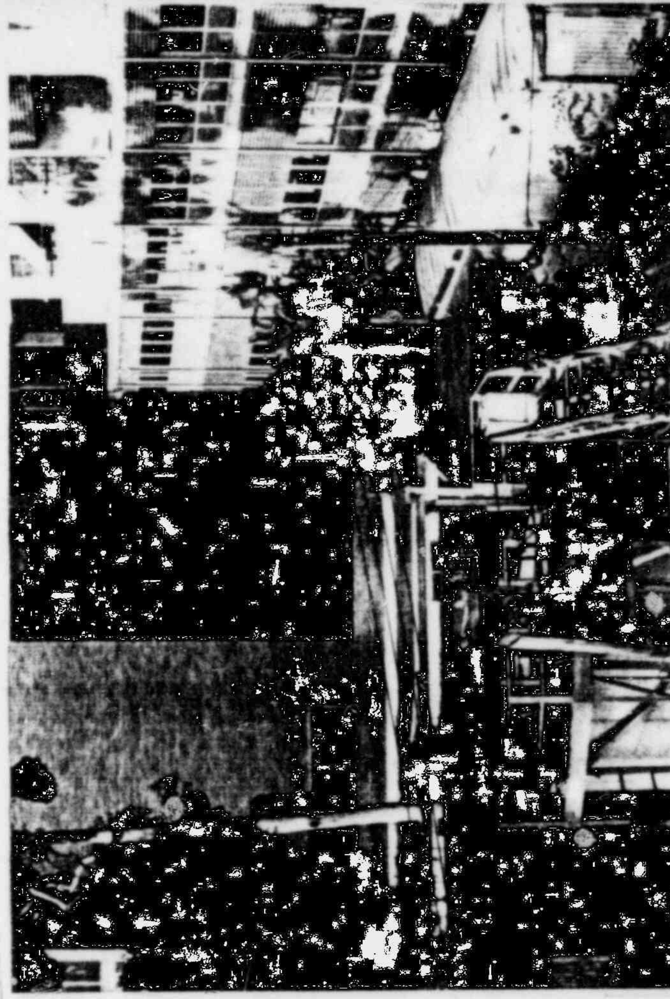


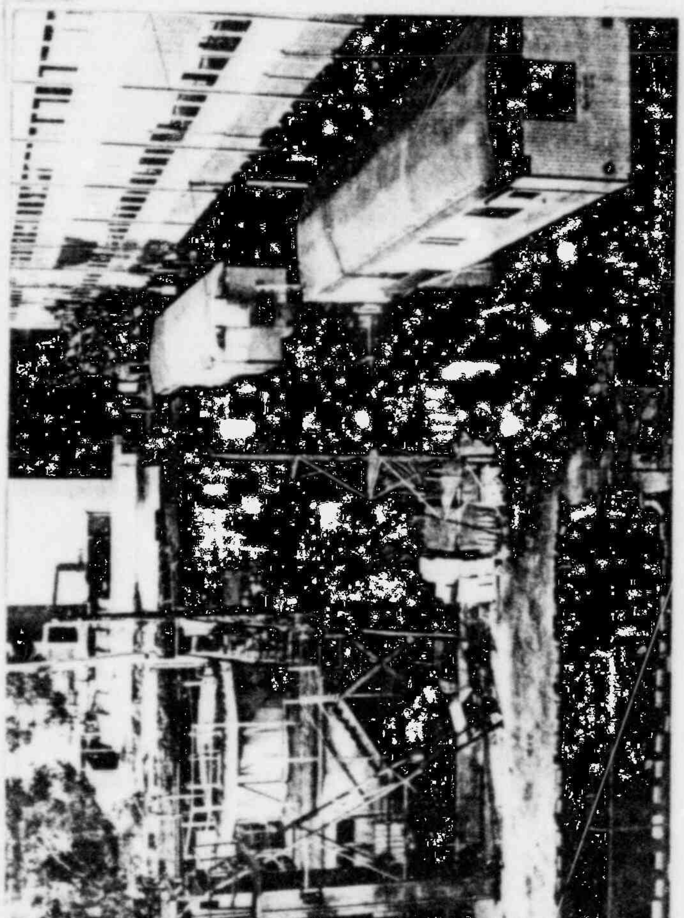







CONTENTION XVI

RESPONSE TO NRC STATEMENT OF FACTS

1. DISPUTED (Plotkin on XVI, ¶6)
2. DISPUTED (vague--some are, many aren't; Plotkin, ¶7,10,11,12)
3. NOT DISPUTED
4. DISPUTED (Plotkin, ¶8)
5. DISPUTED (Plotkin, ¶5,7-9)
6. NOT DISPUTED counter-fact: Analogy to 40-year licenses for power reactors not applicable to UCLA (Plotkin, ¶10)
7. LEGAL CONCLUSION counter-fact: UCLA has exhibited a persistent pattern of noncompliance with NRC regulations (Monosson, Plotkin on III decl's.)

RESPONSE TO UCLA "FACTS"

33. NOT DISPUTED
34. DISPUTED (Plotkin ¶6,7,8,9,10,11-16)