UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

July 10, 1979

MEMORANDUM FOR: All Special Inquiry Group Members

FROM: George T. Frampton, Jr., Deputy Director
NRC/TMI Special Inquiry Group

SUBJECT: DRAFT OUTLINE OF REPORT

Attached is a first draft of an outline of our report, constructed so as to focus attention on the issues and questions that may need to be addressed. This should be regarded as a work in progress, to be revised as we go along. Some of the subsections in this outline contain lists of specific items. These lists are not meant to be definitive; to the contrary, they are illustrative purposes only, so that in succeeding drafts we can begin to supply more accurate and comprehensive lists of the specific design deficiencies, specific regulatory deficiencies, etc. that the Report will have to discuss.

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Outline of Report/List of Possible Issues
To Be Addressed

NRC Three Mile Island
Special Inquiry

# I. INTRODUCTION

Brief discussion of NRC's decision to institute a Special Inquiry under outside, independent supervision. Description of the group's mandate, scope, make-up, methods employed in the study. (List of staff to be supplied as an Appendix).

# II. WHAT HAPPENED?

## 1. Narrative

This section will be a substantial part (at least on-quarter to one-third) of the report and will contain a detailed integrated, narrative account of the accident from 4 a.m. on March 28 until at least six days later. The narrative will integrate and combine the following into a single account:

1.1 The physical sequence in the plant, including operator actions causing these physical events to occur. (This will have to include an interwoven account of how a reactor works!)

1.2 The utility's response.

1.2.1 Operator actions (overlap with 1.1 above; this will require clarification of responsibility between Task Groups 1 and 2).

1.2.2 Decisions and actins by utility management, including make-up and actions of various ad hoc groups formed by management, utility's communications with NRC, B&W, other utilities, its communications with the state and with the press.

1.3 NRC's response: this will be a description of what NRC personnel actually did. For the next draft of this outline, we need a more accurate and comprehensive list of the major contributing NRC components; a tentative suggested list of components whose role should be described follows, for comment and critisicm:

1.3.1 First teams of inspectors to arrive on 3/28; how did they perceive their role and authority; what was their expertise; what did they do?

1.3.2 First NRR team (Vollmer), arriving 3/29.

1.3.3 Designation of Denton as President's delegate, his arrival on 3/30, establishment of on-site NRC command post.

(3) 1.3.4 Region I Incident Response Center

1.3.5 Bethesda Incident Response Center

1.3.6 NRC HQ backup staff

1.3.7 Office of State Programs

1.3.8 Commissioners

1.3.9 NRC's liaison and communication with other federal agencies.

NOTE: We want to isolate and devote our energy to the major NRC individuals and components that played a role in the accident. In other words, we need to make some early choices about less-relevant fact-gathering re NRC response that can be given low priority in the inquiry (such as, how may people in all "played some role," where they were located, etc.).

1.4 Response of the state and other federal agencies. For the next draft, we need a list of state offices and agencies, and of other federal agencies, with short descriptions of their responsibilities, capabilities and their roles in this accident.

conform with 1.1?

Support

1.5 Radiological releases

1.5.1 What kinds of radioactivity does a reactor produce in normal and in failure conditions? How are these types of radioactivity dangerous, and in what doses and circumstances?

1.5.2 What kinds of radioactivity were probably produced in <u>this</u> accident?

1.5.3 Through what pathways did the radioactivity probably escape, when and in approximately what concentrations?

1.5.4 What is the best estimate of the doses and exposures received (a) in the plant, (b) on-site, and (c) off-site as a result?

1.5.5 How were these doses and exposures measured and calculated? What are the bounds on the estimates?

1.5.6 Estimates of danger to health and safety from these doses and exposures. Bounds on the estimates.

A number of specific matters need to be covered in this narrative section, either interwoven in the narrative or possibly set forth separately in conclusory sections. While in some cases these matters are part and parcel of 1.1 through 1.5 (indeed, in some cases they overlap each other), they are separately listed below so that we can identify which matters will be covered by which Task Groups and individuals within Task Groups:

Support

1.6 What were the major strategy decisions (or non-decisions) affecting the status of the plant or releases, how were they made, by whom, and on what basis? For the next draft of this outline we need a more accurate list; a few illustrative items are suggested below to provoke comment and begin compilation of such a list:

1.6.1 The 5:30 a.m. conference call on 3/28

turn off HPI & RCPs?

1.6.2 The a.m. decision on 3/28 to blowdown the system.

1.6.3 The decision in the late afternoon of 3/28 to repressurize How did this decision get made, by whom; who had input?

1.6.4 Decision resulting in 1200 MR release at 6 a.m. on 3/30.

1.6.5 Etc. -- we need to add or subtract as appropriate.

1.7 What were the decisions concerning evacuation? When were they made, by whom, and on what basis? For the next draft of this outline, we need a summary account of major points when evacuation was raised, argued for and ordered. (e.g., 3/30 partial evacuation; was there a decision on Sunday by four NRC Commissioners to recommend evacuation, the Chairman?)

1.8 How bad was the accident and how much worse could it have been?

1.8.1 What could or should have been done to stop or ameliorate the accident? What was the "anticipated" procedure and why didn't it work?

1.8.2 What could or should hae been done to stop or ameliorate the releases? On-site exposures? Why wasn't this done?

1.8.3 How severe was core damage, when did it occur and how? When was this known? Generally recognized? When should it have been known?

1.8.4 Was there a hydrogen bubble and when? What danger did it in fact pose? If the bubble was incorrectly perceived as a significant danger, why did this occur? Where there other scenarios incorrectly perceived to be potentially dangerous?

1.8.5 Alternative sequences: What <u>might</u> have happened <u>if</u>:

1.8.5.1 The reactor had failed to SCRAM?

1.8.5.2 RC pumps had not been successfully restarted?

1.8.5.3 PORV had not been isolated? (i.e., small break LOCA).

1.8.5.4 Off-site power had been lost?

NOTE: Above list is illustrative only. In the next draft of this outline, we should specify which alternative sequences we will consider (including ameliorative sequences).

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1.8.6 How close did TMI-2 come to a more serious core meltdown and greater releases of radioactivity?

1.9 What information was communicated to the public (in the form of official statements, press releases, press conferences) by the various parties, and how did this information jibe with the facts. If inaccurate, why was it inaccurate?

1.10 What was the "socio-economic" effect on the population living in the area of TMI-2?

1.11 Is there any evidence of sabotage? Of bribery? (i.e., somebody being paid off to overlook or approve faulty or dangerous equipment?).

## II. WHY DID IT HAPPEN?

2. Did TMI-2 have any design deficiencies that contributed to the accident? If so, were they (a) unique to this plant, (b) characteristic of all similar plants, or (c) characteristic of all or most nuclear power plants?

Possible types of design deficiencies are roughly grouped in five categories below; the examples given in each category are illustrative only, and for the next draft of this outline we need to produce a more valid list of possible (or alleged) design deficiencies worthy of our attention and/or comment in our Report.

2.1 Plant systems deficiencies Possible examples:

2.1.1 Inadequate primary coolant inventory

2.1.2 Use of U-bend loop in primary system where steam bubble can arrest natural circulation.

2.1.3 Use of EMOV's in addition to code safety valves (was this in part an attempt to prevent SCRAM and resultant down-time?)

2.1.4 RHR not designed to operate at system pressure.

2.1.5 Etc: Are there possible design deficiencies we need to consider in the radwaste system? HPI? Auxiliary feed System? OTSG?

2.2 Command and Control deficiencies. Possible examples:

2.2.1 No reactor trip on turbine trip

2.2.2 No containment isolation on high radiation alone

2.2.3 No automatic signal to unblock auxiliary feedwater motorized blok valves.

2.3 Instrumentation deficiencies. Possible examples:

2.3.1 Inadequate ("missing") instrumentation:e.g., No level indicator for reactor vessel.

2.3.2 Instrumentation with ranges not adequate for abnormal conditions: e.g., thermocouple displays; various in-plant radiation monitors.

2.3.3 Inadequate computer or print-out facilities, especially for real-time reporting in accident situations.

No diagnostic tools

2.4 Sampling and monitoring deficiencies (TLDs; on-site real-time monitors)

2.5 Human factors deficiencies. (This category has some overlap with both 2.2 and 2.3 above, insofar as it includes failure to "design" command and control systems or instrumentation or instrumentation displays with human limitations and the possibility of human error in mind. Furthermore, to answer the question whether any human factors deficiencies contributed to the accident, reference will have to be made as well to the analysis of the contribution of "operator action" discussed in 6., below.)

2.5.1 Poor Control room design.

With respect to any "design deficiencies" identified in the above categories, we will have to answer the following questions:

2.6 Was the deficiency, problem or issue raied in any forum, and <u>should</u> it have been? Specifically, with respect to each system or component identified as having a design deficiency: who took the lead role in designing it, what kind of analysis was done, what was NRC's role, did the matter come up in any licensing review process or appear on a "Unresolved Safety Issue" list, how was it resolved, was the resoltuion proven incorrect?

2.6A Somewhere here -- possibly either before or after the above section 2.6 -- we will need a descripton of NRC's licensing process as it is supposed to work and as it acutally does work (or not work); and a description of the NRC's philosophy of safety. In short, a description of what the NRC does and does not do.

2.7 To what extent are any identified design deficiencies attributed to defects in NRC's basic philosophy of safety or the method of application of that philosophy (e.g., [redacted] the design basis accident approach, fault tree risk assessment, etc.)

2.8 To what extent are any deficiencies attributible to defects in NRC's licensing and review process? Some of the questions that might be covered here that are not immediately obvious from the above outline (we invite additional suggestions for the next draft) include:

2.8.1 Why was the choice made not to analyze and design better against small loss-of-coolant accidents? Why weren't transients better studied and simulated?

2.8.2 Was there adequate planning for the effects of an accident involving significant core damage?

2.8.3 Why was the presence of noncondensible gas in the primary system such a surprise to NRC?

2.8.4 Was control room design and isntrumentation adequate? To what extent was human factors technology used in the development and design of the control room? How does the TMI-2 CR compare with human factors standards? With design concepts used in comparable control rooms (NASA; DOD; chemical industry)?

2.8.5 Was adequate attention focused on the probability of human error and the control thereof? Specifically, on any kinds of human error that may have played a role in this accident?

2.9 To what extent are any identified design deficiencies attributable to failings by the vendor (e.g., faulty or fraudulent analysis).

2.10 To what extent are any design deficiencies attributible to failings by the utility?

2.11 Can we draw any conclusions about the adequacy of NRC's "safety margin" from any such deficiencies? Why was this accident "not a credible event"?

3. Were there specific events or experiences at TMI-2 or at other plants that should have alerted NRC or the utility to the potential for such an accident? If so, how was information about these events handled, who knew about it, and why wasn't appropriate action taken?

A list of such events should be supplied for the next draft. We understand the list might include some of the following:

3.1 Similar occurrences in 1975 and 1977 (Davis-Besse).

3.2 Michelson memo of 12/77, Pebble Springs question.

3.3 Israel to Novak memo of 1/78

3.4 Cresswell's complaints; Cresswell memo of 1/79.

3.5 Operating experience: failure rate of PORV's.

3.6 Were there any precursor events or hints of problems in the operating history to TMI-2?. What was experience with prior turbine trips? Loss of feedwater?

3.7 Were there recommendations arising out of <u>previous</u> accident experiences that were not carried out, and that might have helped prevent or ameliorate this accident? (E.g., any lessons from the Brown's Ferry fire, such as identified lack of lead responsibility for coping with the accident)?

3.8 If precursor events went unheeded, what conclusions can be drawn concerning NRC's and the industry's failure to evaluate prior operating experience (for example, possible NRC failure to analyze and act upon LER's) in a manner sufficent to identify safety problems and cure them?

If the NRC'S performance in this area has been deficient, can we identify reasons why is has been?

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4. Were any specific regulatory requirements, technical specifications, equipment standards, or safety procedures that could or should have been applied to TMI-2 but were not, which might have prevented or ameliorated the accident?

NOTE: This section may overlap to some extent with Section 2., on design deficiencies, since presumably identification of a design deficiency might have led to instituting a new regulatory requirment, or specific safety procedure, to deal with it. However, the main intent of this section is to focus on relatively concrete, detailed specific items: if equipment failed, does that show that it should have been required to be safety grade? Would better shift turn-over procedures have prevented the accident? Would inclusion in the tech specs requirements for actuation (alarm) upon certain specific events have helped? The section also looks at a set of possible reasons why such requirements weren't in place: grandfathering; granting of any exemptions to TMI-2; etc.

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4.1 Were NRC's equipment standards adequate? NRC's standards for vendor or utility QA Programs?

4.1.1 Did the failure of equipment contribute to the accident?

4.1.2 What were NRC'S requirements for such equipment? Should the requirments have been higher? If so, what conclusions can be drawn about why the regulatory process did not work to impose stricter requirements.

NOTE: In section 4.1.2 we will need a discussion of the concept of "safety" as opposed to "non-safety" equipment, and how valid the distinction is.

what about single failure concept

4.1.3 To what extent can equipment failure be traced to defects in the quality assurance program of the vendor? How does the NRC oversee or regulate qualiy assurance? Can we draw any conclusions from equipment failure in this accident as to whether such regulations are adequate?

4.2 Were there any procedures that were not required by the NRC that might have prevented or ameliorated the accident? What follows is an illustrative list only; for the next draft of this outline, we will need a more accurate, comprehensive list of any and all procedures we can now identify that might have been deficient and that might warrant attention and/or discussion in our Report:

4.2.1 Shift turn-over procedures

4.2.2 Checklists and sign-off procedures for surveillance of routine maintenance.

4.2.3 Better procedures for responding to certain accident situations.

4.2.4 Health physics procedures or requirments

4.2.5 Etc.?

4.3 Were newer plants subject to requirements (e.g., under the standard safety review plan, adopted after TMI-2 was reviewed) that might have had an impact on this accident? If so, what conclusions can be drawn about NRC's "grandfathering" approach to safety and about the "ratchet" mechanism NRC uses to implement that approach.

NOTE: In section 4.3 we will need a factual description of how the ratchet process works and how decisions whether to retro fit are usually made.

4.4 Were there any specific exemptions or amendments granted to TMI-2 by NRC that had an impact on the accident?

4.5 Were there any new research projects or projected standards not yet implemented that might have made a difference?

4.6 Were any specific issues raised and contested in the licensing process that might have made an impact?

4.7 Should the need for these additional standards or procedures have been foreseen? If so, why weren't they implemented before? Is this attributible to failings in the NRC licensing and review process? To utility management? To the vendor?

5. Did any deficiencies in the status or condition of the plant -- whether or not they constituted "violations" of the license or NRC regulations -- contribute to the accident and/or releases of radiation and exposures of on-site personnel?

NOTE: To some extent this section will overlap with both 2 and 4. However, it is the intent of this section to ask whether, even assuming the design was adequate and regulations were adequate, there were conditions in the plant that did not meet the regulatory requirements, or leaks or other conditions that simply were never intended to be covered by NRC regulations (or were within regs) that in hindsight contributed to the accident. Of course, the existence of any such conditions might support a conclusion that stricter requirements should have been in place to prevent the conditions, thus putting such conditions into Section 4.rather than this section.

5.1 Physical deficiencies. The list that follows is not meant to suggest any conclusions, but is illustrative; for the next draft of this Outline, we need a more accurate list of the items that might fall under this category:

5.1.1 Clogged condensate polisher

5.1.2 Block valves for auxiliary feedwater closed at start of accident.

5.1.3 Leaks in make-up and let-down system.

5.1.4 Clogged filters on make-up systems pumps.

5.2 Inadequacies in the health physics program. Here, too, we need a list of potential matters to be looked into; we understand at this time that the list might include some of the following:

5.2.1 Inadequate procedures and planning

5.2.2 Inadequate training

5.2.3 Etc.?

5.3 Insofar as any deficiencies are identified in the above sections, do these deficiencies indicate:

5.3.1 Violations of regulations?

5.3.2 Inadequate NRC inspection or enforcement

5.3.3 Inadequate NRC standards and requirements? (If so, then this would be an overlap with section 4 above).

5.3.4 Inadequate maintenance by the utility?

5.3.5 Inadequate procedures by the utility?

5.3.6 Poor manufacture or quality control by the manufacturer? (If so, this would raise questions set forth in 4.7 above).

5.3.7 To what extent do any deficiencies result from the utility being permitted to cut safety corners in order to rush the plant into "commercial operation" by the end of 1978. Specifically, what tax, rate or other advantages accrued to the utility from going commercial on the last day of 1978, if any, and what efforts were made to meet this deadline?

6. What role did operator involvement (and supervisory management of the operators) play in the accident?

(2)

all

NOTE: In this section, the operators and their involvement in the accident will be discussed. This will include operator training, crew selection, operator qualification, etc, as well as the affects of crew shift, fatique and so on. The following is a list of questions that may have to be addressed at one or another points during this inquiry.

NOTE: There is potential for overlap between this section and the portion of section 2 that deals with inadequate design for human error and inadequate instrumentation. There is also potential for overlap between this section and section 4, insofar as 4 deals with inadequate requirements (which arguably could include inadequate requirements for training, operator qualification, etc.) and inadequate procedures (which arguably include procedures to guard against operator error).

It is our tentative intention to try to use this section, section 6, to deal as much as possible with all of the questions relating to the operators' role: i.e. to identify and discuss deficiencies relating to operator qualification, operator eduction, operator training, operator licensing, requirements for control room manning, crew complements, how shift crews are selected and rotated, role of engineers in the control room, the need for more specific operating procedures or manuals in the event of various accidents or transients. We will try to use the design deficiency section (section 2) to talk about inadequate instrumentation, inadequate control room design, and lack of human factors engineering. We will see how this division of attention works as we go along.

6.1 Did operator error contribute to the accident? If so, at what points, and why were those errors made as best we can determine?

6.2 Did the operators have insufficient instrumentation to make the correct decisions?

6.3 Did the operators have sufficient information but fail to obtain it, or fail to rely on or believe it if they obtained it? Why?

6.4 Are qualifications for operators sufficient?

6.4.1 Describe educational qualifications, licensing procedure and requirments for reactor operators. Describe type of person who usually serves in an operator position.

6.4.2 Are these reequirments sufficient to guarantee that an operator will have the ability to run a plant safely? If not, why not?

6.5 Was operator training sufficient?

6.5.1 Describe training requirements and actual training, generally and in the case of these operators.

6.5.2 Was the training adequate to permit response to this emergency situation? Did the operators in fact follow their training? If so, with what results? If training was inadequate, what improvements or changes might have been made that would have prevented or ameliorated the accident.

6.6 Were there adequate procedures in the control room for this kind of accident? What procedures, if any, were followed?

6.7 Should additional technical expertise be regularly in control rooms? Among questions to be addressed here might be. What is the existing philosophy of operator responsibility in controlling the plant? Does it place an undue burden on the operators? What role do supervisors play? Should there have been a highly qualified engineer available on this shift -- ie., would that have made a difference?

6.8 Did the operators rely insuffficnelty on automatic systems?

6.9 Is there evidence that lack of understanding of the control room or features of the control room played a role in the accident? (Thius overlaps with portions of section 2., above).

6.10 Did the physical and mental conditions of the operators play a role in any identified human error? (Questions to be asked may include how long the shift had been together, how many days they had worked previously, whether there were enough men on shift, the time of the accident, whether the shift worked together well, whether individuals were physically or mentally fatigued, whether outside influences (family financial, company problems) may have contributed adversely to their conditions, whether any were under unusual stress situations or reacted poorly to stress.

6.11 How good was this shift?

7. Was the planning and response of the NRC for such an accident adequate?

   7.1 NRC's response plan and planning. What equipment, etc. was actually in place. What is the NRC's <u>anticipated</u> role in an accident?

   7.2 Summarize briefly the actual response of the NRC which will have been set forth in detail in the narrative in Section 1.

   7.3 Was the NRC's plan followed?

   7.4 How effective and helpful was the response. Evaluate the usefulnes of each NRC component listed in Section 1

   7.5 How effective was NRC in coordinating with other federal agencies? The state? The utility?

   7.6 Identify reasons, if any for lack of more effectiveness NRC role. Suggested possibilities are listed below for feedback:

      7.6.1 Inadquate legislature authority?

      7.6.2 Lack of manpower?

      7.6.3 Poor command and control, poor management?

      7.6.4 Poor communications?

      7.6.5 Inadequate technical resources?

      7.6.6 Poor planning?

      7.6.7 Poor coordination with utility? With the state? Other federal agencies?

      7.6.8 Poor coordination with State or other federal agencies?

7.7 In light of the above, how adequate was NRC's planning?

7.8 What should NRC's role be in an accident and how can it plan correctly to fulfill that role? E.g., can NRC "take over" a plant? Does a SWAT team make sense?

8. Was the utility's response to the accident adequate?

8.1 Describe the utility's plan. Equipment in place, training, etc. Did it meet NRC requirements, if any?

8.2 Summarize actual response from narrative above.

8.3 Was the plan followed?

8.4 How effective was the response?

8.5 What factors prevented the response from being more effective?

8.6 Evaluate the planning in light of 8.4, above.

NOTE: Aspects of the utility's response that might be considered include:

(a) Initial operating crew
(b) Alerting State, NRC, plant
(c) Contacting superiors
(d) Management by Upper-level Co. personnel
(e) Use of technical back-up.
(f) Role in informing NRC, State, other agencies
(g) Role in informing public

8.7 Are any new NRC requirements for utility emergency planning indicated?

9. **What was the response of other federal agencies and the state?**

   9.1 Describe state authority.

   9.2 Describe the roles anticipated for other federal agencies.

   9.3 Describe analytically and evaluate the roles the state and other federal agencies actually played. (same overlap on evacuation with Section 1 and 10).

   9.4 Describe the White House role.

   9.5 Analyze the question of whether NRC made the best use of these other resources.

   9.6 What ought the role of the state and other federal agencies be in an accident situation, and how should the NRC utilize them and coordinate with them?

10. The public was not adequately informed as to (1) the dangers and potential dangers involved in the accident, (2) releases, and (3) the likelihood of evacuation, and actual implementation of evacuation.

    NOTE: There will be some overlap between this section and sections 1 and 9.

    10.1 Was this due to conscious decisions or rather to negligence, poor coordination, or lack of reliable information on the part of those communicating with the public?

    10.2 With respect to the monitoring of releases, whose responsibility was this, was there adequate planning, who did the monitoring, who was supposed to collate the information, how was this actually done, who communicated release information to the public, and how accurate was it?

10.3 What improvements are necessary to improve monitoring of releases, analysis of data and communication of that data in future accidents (planning, roles of various agencies; equipment; coordination, and command and control; backup resources for analysis)?

10.4 Should there have been a complete evacuation? Was the evacuation advisory an unnecessary decision? Was the action that was taken decided in a rational way? Was it implemented effectively? Was planning for it adequate? How should such decisions be made and implemented? How should they be planned for?

10.5 What can be done to improve the quality and timeliness of information made available to the public and to decision-making bodies that must implement evacuation or other public health decisions.

11.0 Do the events surrounding the Three Mile Island accident raise any questins or suggest any genralizations as to whether our present institutional approach to the safe delivery of commercial nuclear power, in which the public has apparently put its faith to date, is indeed adequate?

NOTE: Possible generalizations or questions that might be drawn from the facts as they emerge are listed below. This list is illustrative only; it is intended to stimulate thinking about the types of questions we may want to discuss in our Report, even if we cannot resolve them but can only highlight them as issues:

11.1 Does the system of placing primary responsibility for safety on the utility, which typically has the least expertise (compared to the vendor and the NRC), make sense?

11.2 What conclusions can be drawn about the NRC's basic philosophy of setting design goals and letting the vendor develop a design to meet those goals? This raises the questions of standardization and of greater regulatory involvement in design.

11.3 Are there institutional aspects of the NRC itself that tend to inhibit its fullfilment of its statutory responsibilities? For example, do any of the factors listed below play a significant role? Are there other factors we should consider?

11.3.1 The history of NRC'S creation from the AEC, and the AEC'S traditional promotional role.

11.3.2 The Coimmission form of regulation. Compare the NRC to other agencies in which regulation of economic behavior is done by Commission (ICC, FTC, CAB, SEC) but the protection of the public health and safety is committed to single-Administrator groups (FDA, EPA, FAA, MHSA, OSHA).

11.3.3 Does the autonomy of the various offices within the NRC, including possible lack of coordination, competition, mistrust, etc., hamper the Commission's work?

11.3.4 Is the Commission plagued by poor central management?

11.3.5 Does the Commission have inadequate staff?

11.3.6 Does physical separation of the offices hinder the work?

11.3.7 Is the inspection and enforcement philosophy adequate? Is the application of this philosophy adequate?

11.4 Does the Commission have its priorities wrong? Does it spend too little time and attention on safety? Too much on trivia? Does it fail to emphasize safety enough?

# III RECOMMENDATIONS