

JUN 19 1985

MEMORANDUM FOR: D. F. Kirsch, Acting Director  
 Division of Reactor Safety and Projects, Region V

FROM: J. G. Partlow, Director  
 Division of Inspection Programs  
 Office of Inspection and Enforcement

SUBJECT: ASSESSMENT OF IMPLEMENTATION OF THE NRC INSPECTION  
 PROGRAM BY REGION V AT PALO VERDE UNIT 3

The Office of Inspection and Enforcement described to the Commission in SECY-82-150A the assessment of the implementation of the NRC inspection program in conjunction with Construction Appraisal Team (CAT) inspections. Accordingly, we have examined Region V's implementation of the construction inspection program based on a limited scope inspection of Palo Verde Unit 3, meetings in the Region V Office, several discussions with Region V personnel, and in-office review of inspection data. The enclosure to this memorandum documents the results of our assessment of the construction inspection program implementation at Palo Verde Unit 3 for the period February 1984 through March 1985.

Our conclusion is that Region V for Palo Verde Unit 3 is providing for the acceptable implementation of the MC-2512 construction program. However, considerable effort is still required to complete the required inspection program at Palo Verde Unit 3.

J. G. Partlow, Director  
 Division of Inspection Programs  
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Enclosure: Assessment

cc w/enclosure:  
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REGIONAL CONSTRUCTION INSPECTION PROGRAM ASSESSMENT -  
PALO VERDE UNIT 3 (REGION V)

I. Objective

The implementation of the MC 2512 reactor construction program for Palo Verde Unit 3 was assessed. The assessment consisted of a staff audit of in-house documentation and the performance of on-site inspections in accordance with selected IE Manual inspection procedures. The staff audit included a detailed review of inspection reports and associated inspection hours for the period February 1984 through March 1985. The assessment objective was to evaluate the degree of program completion, and the adequacy and consistency of program implementation.

II. Assessment Activities

The current revision of the MC 2512 construction inspection program was issued March 30, 1984. The individual inspection procedure revisions issued for implementation during the 1983-1984 period permitted use of the earlier program procedures for completion of inspections already in process. The IE office audit of documents for the assessment showed that the construction inspections conducted during this assessment period were primarily reported under the earlier program modules and only a few of the current modules were used. Therefore, the assessment of program implementation and completion was primarily based on the earlier requirements and on the region's plans for implementation of the current program.

The assessment covered the following areas:

1. An evaluation of 766 Computer System data on the status of program completion and on inspections conducted from February 1984 through March 1985 for Palo Verde Unit 3 with comparisons to Units 1 and 2 and other selected multi-unit sites.
2. A review of eighteen inspection reports performed by regional and resident inspectors for the period February 1984 through March 1985 pertaining (at least in part) to Unit 3.
3. An on-site inspection by IE and resident inspectors on March 25-29, 1985, of a sample of installed piping and electrical cable systems and supports, design change control, and new and spent fuel storage racks.
4. A review of region and resident inspector in-house records of Palo Verde Unit 3 MC 2512 program implementation at the Region V office April 1 and 2, 1985.
5. A review of Region V practices for use of contractor technical assistance in conducting inspections.

### III. Assessment Findings

#### A. Program Completion

The total cumulative manhours by module reported on the 766 Computer System were reviewed and selected comparisons were made to Palo Verde Units 1 and 2 (See Attachment 1). This information was compared to the region's documentation for program completion, SALP reports, inspection reports and fiscal year Operating Plans.

The previous revision of MC 2512, issued September 1981, included a recommended prioritization of inspection procedure requirements. The Manual Chapter identified as Priority I those requirements which were to be given first priority for completion. The priority system was in use from 1981 to 1984 when the priority system was replaced by the current MC 2512 revision issued in March 1984. As noted in Section II, above, the region's inspections at the Palo Verde Site were generally accomplished under the priority system of the previous MC 2512 program and the assessment of program completion is based on that fact.

1. The in-office review of 766 Computer System data showed that most of the inspection modules used were conducted within their prescribed frequency, and the review of inspection reports indicated that inspection activities were adjusted based on the latest SALP ratings. However, the 766 data was found to be incomplete in that it did not show a number of procedure review and records review modules and several work observation modules for which region in-house records had taken credit based on inspections at Units 1 and 2.

An example is module 35060B Licensee Management of QA Activities, originally issued in July 1980. The module has a current frequency of every eighteen months and, according to the 766 Computer System data, has not been performed for any of the three units. A review of region in-house records found that the region is taking credit for a 1980 mid-term QA module (35200B) and a 1981 team inspection for completion of the 35060B requirements on Unit 3. However, the region acknowledges that changes in licensee QA management made during the past year should be reconsidered in determining whether MC 2512 inspection goals for 35060 have been satisfied before the module is considered completed for Palo Verde Unit 3.

The review of program status documents at the region office indicated that the region recognized the inconsistency between the 766 Computer System data and the actual completion status of a number of modules. Several memorandums were issued to document program status, including those modules for which credit was taken at Unit 3 for inspections performed on Units 1 or 2, and those modules completed through other bases. The three principle memorandums are: L. Miller to A. Chafee, Status of Construction Inspection Program (MC 2512) at Palo Verde Units 2 and 3, March 1, 1985; C. Sorensen to L. Miller, Construction Module Review, PVNGS Units 2 and 3, March 21, 1985; and P. Narbut

to D. Kirsch, Palo Verde Construction Inspection Program, a Perspective, March 22, 1985.

The region's basis for interunit inspection credit at Palo Verde is addressed in the March 22, 1985 memorandum:

"The Palo Verde sites, Units 1, 2 and 3 are duplicate sites which were/are being constructed in series utilizing the same personnel, the same procedures, the same material, and under the same management control system. The site is relatively easy to inspect in that the majority of safety-related work was done by one contractor (Bechtel) as opposed to the more difficult situation of multiple contractors."

The interunit credit is allowed by MC 2512 policy for the performance of procedure review modules. The program, however, does require that inspections be continued as necessary to review procedures which have been significantly revised or modified between units. On the other hand, the general policy of MC 2512 for performance of work observation and record review inspection procedures is that they are to be implemented for each unit.

The region's program for Unit 3 takes credit for Unit 1 procedure reviews under six Priority I modules (45051B, 47061B, 48061B, 53051B, 55171B, 55181B), but the inspections recorded by the region for Unit 3 do not indicate any followup reviews for revisions to procedures. The onsite assessment indicated that the A/E's procedures and specifications in use at Unit 3 have received numerous revisions over the years, although significance of the changes from the previous revisions was not reviewed. The region acknowledged that neither the 766 Computer System nor their other program records reflect that followup inspections of procedure changes were made. The region will reevaluate the need for procedures review inspections to review the status and adequacy of significant changes in the licensee's construction program procedures.

The work observation and hardware inspection modules have for the most part been completed. The memorandums show the few that have not been started are scheduled to be completed by the resident inspector.

The 766 Computer System data review also indicated a number of welding modules in the 550XX and 551XX series as not having been done or only partially completed. The region had determined that the two series represented a duplication of effort and chose to complete the 551XX series of welding modules instead, using Unit 1 inspections as credit for Units 2 and 3 for several modules. The MC 2512 Priority listing considered portions of both series to be Priority I and, generally, to be applicable to each unit. Although the areas of inspection generally include like items, the 550XX series specifically includes NDE review and records review inspection requirements not included in the



551XX series. It was not readily apparent from the records available that the NDE and record inspection requirements were completed or otherwise satisfied. The region acknowledged that a review of the inspection requirements would be performed to determine if additional inspection is required to ensure that all inspection areas are adequately covered.

Attachment 1 identifies the welding, QA and records review modules for which the closure bases require additional review by the region.

2. The region's program documentation also identified modules whose inspection windows had been missed. This is primarily due to their management decision, also documented, to defer inspections at the Palo Verde site because of other inspection resource priorities. A decision to continue deferral of some inspections at Unit 3 also prevailed in 1984 following a February 1983 Reactor Inspector's evaluation which identified the low level of inspection at Palo Verde. However, as discussed above, inspection efforts at Unit 3 were being satisfied in 1983 and 1984 through interunit inspection credit and additional inspections. Further, the Region V Operating Plan for FY 85 includes a 25 percent increase in inspection resources for Unit 3 which the region had incorporated to address the backlog of inspections.

The additional resources for FY 85 includes an increase in inspection hours of 20 percent over FY 84 hours for MC 2512 program directed activities for Unit 3. A total of 152 on-site inspector hours have been expended through February 16, 1985, leaving 848 hours of direct inspections to be accomplished in the next 7 months. Region V is currently developing plans to accomplish the budgeted inspections using regional and resident inspectors.

3. The implementation of the currently revised MC 2512 program was reviewed during the region office visit. The 766 Computer System indicated that only a few of the current modules were in use and the region's inspection planning documents indicated that use of the superceded inspection modules would continue. A review of the resident inspector's records for the status of program completion by resident and regional inspections also indicated an inconsistent use and reporting of the current modules that had been used. The records are called Line Item Checklists and consist of re-typed inspection requirements or photocopied inspection procedures with the addition of inspector's initials and inspection report numbers to indicate the applicable line items which have been completed.

The review of the Line Item Checklists for Unit 3 showed that the current instrumentation modules (52051, 52053, 52055) were used as required by the current program. The current modules for as-built inspection (37051) and mechanical components (50073) did appear as the Line Item Checklists and apparently were used for the inspections, but the hours in the 766 Computer

System were recorded under the superceded module numbers 37051B and 50074B. The Checklists also showed that inspections were started, conducted and recorded under several previous modules (47061B, 47063B, 47065B, 50063B) eight to nine months after the modules had been superceded.

The current MC 2512 program requirements were discussed with region staff and the region committed to implement the current program for inspection modules not yet started. The resident inspector was assigned to develop a schedule to meet this commitment.

4. The book of Line Item Checklists for Unit 3 was also compared to the Priority I requirements of the previous MC 2512 program. The line items performed generally agreed with those requirements and in some cases exceeded them. The inspection modules used at Palo Verde Unit 3 are usually shown as fully completed and closed in the 766 Computer System at 100 percent completion of the Priority I line items. The modules used were generally implemented consistent with the stage of construction of the site. The 766 data also indicates that 53 percent of the modules requiring closure are more than 75 percent complete (See Attachment 1). With the exception of the welding procedures discussed above, almost 70 percent of the other modules are shown as more than 75 percent complete.
5. Based on the data in the 766 Computer System the hours expended for Unit 3 were procedures review - 89, work observation - 848 and records review - 107 (See attachment 1). This large emphasis on work observation, 81 percent of the hours, was expected and is highly desirable for the third unit of a multi-unit site. What was not expected was the comparable distribution of hours for Units 1 and 2. It was anticipated that a significantly greater proportion of hours would have been spent on procedures review for the first unit than on the subsequent units.

#### B. Review of Palo Verde Construction Inspection Reports

Eighteen regional and resident inspector inspection reports covering the period February 1984 through March 1985 for Unit 3 were reviewed. As all but one of the reports were for all three units, the assessment conclusions drawn from the reports are applicable to the overall construction program at the Palo Verde site. Inspection findings in several areas were independently verified by an on-site inspection.

1. The inspection reports reviewed were found to be consistent with the division of effort between units discussed above. The major portion of the reports concerned Unit 1 with lesser attention to Unit 2 and the least attention given to Unit 3. The review of inspection reports indicates that for all three units the scope and depth of inspections are usually consistent with the efforts and requirements of the inspection modules.

The inspection reports reviewed generally provide a clear narrative of the inspection activity and findings. Although well documented in other reports, two inspection reports (50-530/84-08 and 50-530/84-10) do not provide details for the individual 10 CFR 50.55(e) deficiencies that were reviewed and closed. The two reports do provide, however, a concise evaluation of the A/E's program for reporting and evaluating 10 CFR 50.55(e) deficiencies.

The references to plant units in the inspection reports were generally not precise or consistent. Reports 50-530/84-07 and 50-530/84-16 are examples where clear identification of which inspection activities apply to which unit is made in the discussion and report 50-530/84-15 is an example where unit distinctions are not clear.

2. The time required to issue an inspection report is detailed currently in MC 0610 and prior to February 1984 in MC 1005. The time to issue the reports reviewed was determined by the last date of inspection and the date of the report's transmittal letter. Of the eighteen reports reviewed, only two were issued within the twenty days required by MC 0610 or MC 1005. Time to issue the reports averaged 39 days and ranged between 10 and 75 days. In addition, MC 0610 indicates that the inspection report cover page should list the inspection procedures used which is not evident in the Palo Verde inspection reports.

Based on a review of the inspection report transmittal letters, it is apparent that subsequent to September 1984, the request for licensee proprietary review was deleted. This indicates the review for proprietary information is being conducted by the region in accordance with the guidance in MC 0611.

#### C. Onsite Assessment

The one week inspection effort was conducted at Palo Verde Unit 3 to provide an independent assessment of the regional inspection program at Unit 3. An overview of items previously inspected by the region was made and results compared to findings reported by the region, and resident inspectors' activities were independently observed to determine adequate and consistent implementation of inspection procedures. Inspection details are contained in Inspection Report 50-529/85-14, 50-530/85-09.

The overview of items previously inspected by the region consisted of selected portions of modules 37051B and 51063B. In accordance with 37051B, II.A.2.a, a portion of the Unit 3 Auxiliary Feedwater System (Train A, from the pump discharge nozzle to pipe support 003-H-008) was inspected. This piping system had previously been inspected by the Resident Construction Inspector. No discrepancies between installation and the latest approved design were identified. In addition, a portion of the High Pressure Safety Injection System piping was inspected and no discrepancies were identified.



Line items II.2.c.(3), (4) and (10) of procedure 51063B were inspected on three medium voltage power cables previously inspected by region based inspectors. No significant discrepancies were noted between the installations and installation requirements. In addition, several raceway segments and cable tray hangers were inspected. One deviation from design and three open items were identified relating to cable tray hanger installation and raceway and hanger bolt torquing. A review of the region's documentation for work observation in accordance with module 51063B, inspection report 50-530/84-07 and the Line Item Checklist, indicated that the region's inspection did not include the line item for raceway supports.

The observation of resident inspector activities included selected line items of modules 51063 for work observation of a cable pull operation and 50095 for procurement documentation review and inspection of new and spent fuel storage racks. The inspection procedures were properly and adequately interpreted and inspection requirements were completed as intended by the MC 2512 program.

The overview of previous inspections and the observation of resident inspector activities found the region's inspection practices to be consistent with program requirements.

#### D. Implementation Consistency

Inspection manhours were compared for Palo Verde Unit 3 and four other units of multi-unit sites. The units were chosen for their approximate stage of completion, and unit total and assessment period hours were compared (See Attachment 2).

The vast dissimilarities between Palo Verde Unit 3 and the other sites permits only the broadest of comparisons. Three of the four comparison plants are first units and would therefore receive higher inspection hours as procedures review and unit-shared construction inspection would be performed for that unit. And although one comparison plant, Millstone 3, is also a third unit, all three Millstone units were designed and constructed by three different A/E's making use of interunit credit impossible.

The relatively low total hours for Palo Verde Unit 3 reflect the region's management decisions to defer inspections. However, the hours for this assessment period (2/84-3/85) do indicate the interunit credit and increased inspection effort after 1983.

#### E. Use of Contractor Technical Assistance

The region's practices for oversight of contractor technical assistance used in conducting MC 2512 inspection activities was reviewed including two inspection reports involving the use of Lawrence Livermore National Laboratory contractor personnel. One report (50-528/84-48, 50-529/84-41, and 50-530/84-31) related to a special inspection conducted for Palo Verde Units 1, 2 and 3 of the licensee's and the architect engineer's (Bechtel) activities in the areas



of as-built configuration control for pipe supports and design control administration and implementation. The second report (50-275/85-05 and 50-323/85-06) involved contractor personnel assistance in inspecting the plant modifications being implemented at Diablo Canyon as a result of the design verification program.

The assessment in this area was conducted through a review of the two referenced inspection reports, related Region V and contractor correspondence, and discussions with Region V staff. The scope of the training presented to Region V staff on the use of contractor technical assistance in conducting inspections was also reviewed. Based on these reviews, Region V's practices for oversight of contractor personnel during assigned inspection activities was found to be consistent with the IE guidance contained in the R. C. DeYoung to Regional Administrators memorandum of May 18, 1984.

#### IV. Overall Assessment Conclusions

The degree of completion of the construction inspection program at Palo Verde Unit 3 is generally consistent with the construction status of the site. A small number of missed inspection windows are attributable by the region to a management decision on plant inspection priorities which resulted in reducing the inspection effort at the Palo Verde site during 1982-1984. Generally, the missed areas for work in-process had been inspected previously at Units 1 or 2 or are now scheduled for completion by regional or resident inspectors. However, the region will need to complete certain work observation, record review and procedures review inspections for which credit had been taken for inspections previously conducted on Units 1 or 2. The region should use the inspection procedures of the current MC 2512 program for inspections not yet started.

The inspection reports usually provide clear records of inspection activity and a general relationship between the discussion and inspection procedure, although the specific procedures are not identified. The consistency of identifying inspection activities to the applicable units in multi-unit inspection reports needs improvement. Inspection findings are clearly stated and documented and violations are soundly supported by facts. However, the inspection reports are generally not issued within the time period required by MC 0610. Independent verification and observation of resident inspector activities found inspection practices meeting the intent and requirements of the program.

The region's practices for use of technical consultants was found to be consistent with issued IE guidance.

766 DATA SUMMARY\*  
MC 2512 STATUS OF PALO VERDE UNIT 3

Total Inspection Hours Distributed by Inspection Procedure (IP) Scope:

	<u>Hours</u>	<u>Unit 3</u> <u>Percentage</u>	<u>Hours</u> <u>(Unit 1/Unit 2)</u>	<u>Percentage</u> <u>(Unit 1/Unit 2)</u>
Procedure Review IPs	89	9	129/72	8.1/7.8
Work Observation IPs	848	81	1203/711	75.1/77
Records Review IPs	<u>107</u>	<u>10</u>	<u>261/141</u>	<u>16.4/15.2</u>
TOTAL	1044	100	1593/924	100/100

Distribution of Unit 3 IPs by Reported Degree of Completion:

<u>Percent Completion</u>	<u>No. of IPs</u>	<u>Percentage</u>
less than 25%	8	13
26 - 50%	18	28
51 - 75%	4	6
76 - 100%	<u>34</u>	<u>53</u>
	64	100

IP's Requiring Additional Region Evaluation of Closure Bases for Unit 3:

Quality Assurance           35060B, 35061B, 35065B  
 Safety Related Piping       49065B  
 Welding and NDE           55063B, 55073B, 55083B, 55065B, 55066B, 55075B, 55085B

Review of construction procedure changes for all areas of current inspection.

\*The summary is based on 766 Computer System Data as of January 31, 1985.