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10 CFR 50.55a

March 5, 2015

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Calvert Cliffs Nuclear Power Plant, Unit 1
Facility Operating License No. DPR-53
NRC Docket No. 50-317

Subject: Relief Request for Dissimilar Metal Butt Weld Examinations

In accordance with 10 CFR 50.55a, "Codes and standards," Paragraph 10 CFR 50.55a(z)(2), Exelon Generation Company, LLC (Exelon), is proposing an alternative to the requirements of 10 CFR 50.55a(g)(6)(ii)(F) regarding examination coverage of dissimilar metal butt welds on the basis that complying with the specified requirement would result in hardship or unusual difficulty.

Exelon requests approval of this relief request by February 11, 2016 to support the Spring 2016 outage at Unit 1.

There are no regulatory commitments in this letter.

If you have any questions concerning this letter, please contact Tom Loomis at (610) 765-5510.

Respectfully,

David T. Gudger
Manager - Licensing & Regulatory Affairs
Exelon Generation Company, LLC

Attachments: 1) Relief Request RR-ISI-04-10
2) Examination Coverage Plots

cc: Regional Administrator, Region I, USNRC
USNRC Senior Resident Inspector, CCNPP
USNRC Project Manager [CCNPP]
S. T. Gray, State of Maryland

A047
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Attachment 1

Relief Request RR-ISI-04-10

Relief Request For Preemptive ISI Relief for Calvert Cliffs Nuclear Power Plant, Unit 1 Dissimilar Metal Butt Weld Examinations (RR-ISI-04-10)

1.0 ASME CODE COMPONENT(S) AFFECTED

Code Class:	Class 1 - PWR Pressure Retaining Dissimilar Metal Piping and Vessel Nozzle Butt Welds Containing Alloy 82/182. American Society of Mechanical Engineers (ASME) Code Case N-770-1, Table 1, Examinations Categories.
Inspection Item B:	12 Unmitigated Butt Welds at Cold Leg Operating Temperature (See Table 1A)
Inspection Item D:	3 Uncracked Butt Welds Mitigated with Stress Improvement (See Table 1A)
Inspection Item E:	1 Cracked Butt Welds Mitigated with Stress Improvement (See Table 1A)

2.0 APPLICABLE CODE EDITION AND ADDENDA

ASME Boiler and Pressure Vessel Code, Section XI, 2004 Edition, no Addenda, and Code Case N-770-1 subject to conditions specified in 10 CFR 50.55a(g)(6)(ii)(F).

3.0 APPLICABLE CODE REQUIREMENT

With the issuance of a revised 10 CFR 50.55a in June 2011, the Nuclear Regulatory Commission (NRC) incorporated by reference ASME Code Case N-770-1, "Alternative Examination Requirements and Acceptance Standards for Class 1 PWR Piping and Vessel Nozzle Butt Welds Fabricated with UNS N06082 or UNS W86182 Weld Filler Material With or Without Application of Listed Mitigation Activities, Section XI, Division 1" (ASME Approval Date: December 25, 2009). Specific implementing requirements are documented in 10 CFR 50.55a(g)(6)(ii)(F). Requirement (4) states:

> (4) The axial examination coverage requirements of Paragraph -2500(c) may not be considered to be satisfied unless essentially 100 percent coverage is achieved.

Additionally, as required by Code Case N-770-1, Paragraph -2420, "Successive examinations are specified in Table 1." Table 1, Inspection Item B, requires inspection every second inspection period not to exceed 7 years. Inspection Items D and E also require successive examinations based on defined criteria.

As also discussed in the Reference 1, Question 11, "Alternative inspection requirements to those contained in Code Case N-770-1, with conditions as imposed in 10 CFR 50.55a(g)(6)(ii)(F), should be submitted and authorized by the NRC pursuant to 10 CFR 50.55a(a)(3)(i) or (a)(3)(ii) prior to implementation." Accordingly, attached is the relief request for the successive examination of the dissimilar metal piping and vessel nozzle butt welds containing Alloy 82/182.

4.0 REASON FOR THE REQUEST

Calvert Cliffs Nuclear Power Plant (CCNPP) previously submitted relief requests to the U.S. Nuclear Regulatory Commission requesting an alternative to the examination requirements contained in ASME Code Case N-770-1 for selected Dissimilar Metal welds (DMWs) in References 2 and 3 (Units 1 and 2, respectively) as part of the baseline inspection requirements. These relief requests were approved in the Reference 4 and 5 U.S. Nuclear Regulatory Commission Safety Evaluation Reports.

In preparation for the future examinations of these DMWs, currently scheduled for Unit 1 in 2016, CCNPP, Unit 1 is seeking relief from the N-770-1 requirements to examine DMWs to the required coverage. This relief request will mitigate potential plant startup restraints at a time in which resources to process a relief request will be at a premium. The examinations are required to be performed during the 2016 refueling outage in order to maintain compliance with the examination periodicity requirements of Code Case N-770-1, paragraph -2420. Exelon Generation Company, LLC (Exelon) is proposing an alternative to the examination coverage requirements of Code Case N-770-1, Paragraph -2500 and item (4) of 10 CFR 50.55a(g)(6)(ii)(F) in accordance with 10 CFR 50.55a(z)(2) on the basis that complying with the specified requirement would result in hardship or unusual difficulty during the CCNPP, Unit 1 spring 2016 refueling outage.

The welds shown in Table 1A are the applicable welds ≥ 2 inches Nominal Pipe Size (NPS) covered by the requirements contained in ASME Code Case N-770-1, Section -1000, where essentially 100 percent coverage was unable to be obtained for the susceptible material examination volume. These welds have been categorized in accordance with Table 1 in ASME Code Case N-770-1. The examination volume coverage achieved during the 2010 refueling outage is also included in Table 1A in three columns, representing different coverage determination criteria.

The 16 welds in Table 1A consist of: 12 welds that are Code Case N-770-1 Inspection Item B, unmitigated at Cold Leg temperature; 3 welds that are Inspection Item D, un-cracked mitigated welds, and; one Inspection Item E weld, cracked mitigated weld.

The 16 welds listed in Table 1A will be examined during the upcoming 2016 outage using current state of the art examination methodology for DMWs. All but one weld (118500/4-PS-1003-6) involves CASS components on one side. Weld 118500/4-PS-1003-6, which does not involve a CASS component, has its examination volume limited by the geometry of the joint, as illustrated in the figure contained in Attachment 2.

TABLE 1A - UNIT 1 DM WELDS NOT MEETING EXAMINATION COVERAGE REQUIREMENTS												
DM Weld Designator / ID	Location	NPS	Inspection Item Category	N-770-1 Based Coverage[1][2]			N-770-1 Coverage including CASS[1][3]			Susceptible Material Coverage[4]		
			N-770-1	Axial Scan (%)	Circ Scan (%)	Total (%)	Axial Scan (%)	Circ Scan (%)	Total (%)	Axial Scan (%)	Circ Scan (%)	Total (%)
102300 / 30-RC-11A-7	11A RCP Inlet	30″	B	71	57	64	100	71	86	100	63	82
102450 / 30-RC-11A-10	11A RCP Outlet	30″	B	77	61	69	100	84	92	100	91	96
104550 / 30-RC-11B-7	11B RCP Inlet	30″	B	73	60	67	100	76	88	100	74	87
104700 / 30-RC-11B-10	11B RCP Outlet	30″	B	63	63	63	100	100	100	100	100	100
107450 / 30-RC-12A-7	12A RCP Inlet	30″	B	80	66	73	100	66	83	100	71	85
107600 / 30-RC-12A-10	12A RCP Outlet	30″	B	71	67	69	99	94	97	98	88	93
109600 / 30-RC-12B-7	12B RCP Inlet	30″	B	72	58	65	100	70	85	100	64	82
109750 / 30-RC-12B-10	12B RCP Outlet	30″	B	80	80	80	100	100	100	100	100	100
110450 / 12-PSL-1	PZR Surge @ PZR	12″	D	68	44	56	100	77	88	100	50	75
111100 / 12-PSL-13	PZR Surge @ RCS Hot Leg	12″	E	64	63	64	100	66	83	100	98	99
113150 / 12-SC-1004-1	Shutdown Cooling to RCS Hot Leg	12″	D	72	72	72	100	100	100	100	100	100
114350 / 12-SI-1009-16	Safety Injection to 11A Cold Leg	12″	B	73	69	71	100	69	85	100	92	96

TABLE 1A - UNIT 1 DM WELDS NOT MEETING EXAMINATION COVERAGE REQUIREMENTS												
DM Weld Designator / ID	Location	NPS	Inspection Item Category	N-770-1 Based Coverage[1][2]			N-770-1 Coverage including CASS[1][3]			Susceptible Material Coverage[4]		
			N-770-1	Axial Scan (%)	Circ Scan (%)	Total (%)	Axial Scan (%)	Circ Scan (%)	Total (%)	Axial Scan (%)	Circ Scan (%)	Total (%)
115200 / 12-SI-1010-14	Safety Injection to 11B Cold Leg	12″	B	73	53	63	100	82	91	100	65	83
116000 / 12-SI-1011-13	Safety Injection to 12A Cold Leg	12″	B	67	48	58	100	81	91	100	60	80
116750 / 12-SI-1012-13	Safety Injection to 12B Cold Leg	12″	B	67	30	48	100	63	81	100	34	67
118500 / 4-PS-1003-6	PZR Spray	4″	D	100	70	85	N/A	N/A	N/A	100	99	100

Notes:

(1) The examination volume is based on Figure 1 from ASME Code Case N-770-1.

(2) Coverage has been calculated based on the limitations contained in the Section XI, Appendix VIII-qualified examination procedure, SI-UT-130 R3, which is not qualified for examinations performed from the CASS material side of the component.

(3) Calculated coverage values include the CASS material that was interrogated by the examination technique.

(4) Examination coverage of the susceptible material located in the lower 1/3 thickness region of the base material has been estimated based on original design drawings.

5.0 PROPOSED ALTERNATIVE AND BASIS FOR USE

In accordance with 10 CFR 50.55a(z)(2), relief is requested for the components listed in Table 1A above on the basis that the required examination coverage of "essentially 100 percent" or "100 percent of the susceptible material volume" for CASS items is unattainable due to physical obstructions and the limitations imposed by design, geometry, and/or materials of construction. Specifically, relief is requested from the examination coverage requirements of Code Case N-770-1, Paragraph -2500 and item (4) of 10 CFR 50.55a(g)(6)(ii)(F).

CCNPP, Unit 1 has examined these welds in the past. In 2010, CCNPP, Unit 1 used examination techniques qualified to meet the requirements of ASME Section XI, Appendix VIII, as required in 10 CFR 50.55a(g)(6), that achieved the maximum practical amount of coverage obtainable within the limitations imposed by the design, geometry and materials of construction for the components and examination techniques listed. Based on the design configuration of the components and currently available examinations techniques, CCNPP, Unit 1 has not been able to achieve essentially 100 percent coverage of the susceptible material volume and/or essentially 100 percent code coverage for the 16 welds listed in Table 1A without major modifications to the components. Plots of the ultrasonic testing (UT) coverage of the examination volume of those 16 affected welds are contained in Attachment 2. Although essentially 100 percent code coverage was not obtained, every effort was made to obtain the maximum practical coverage. Note that Table A, provided in Reference 2, lists all 27 Class 1 DM welds ≥ 2 inches NPS in the reactor coolant system pressure boundary and the coverage achieved in the 2010 refueling outage. The combination of coverage amount combined with the examination techniques discussed below, contributed to maintaining a high level of quality and safety.

The NRC, in its Safety Evaluation for CCNPP, Unit 1 (Reference 4) stated the following:

> "For each weld under the scope of this request, the licensee stated that 100 percent inspection coverage was obtained for circumferential flaws in the PWSCC susceptible material. The limited inspection coverage for axial flaws is not as significant of a safety concern, as an axial PWSCC flaw will not lead to failure of the piping system, only a potential leak. Further, the lower temperatures of each of the non-mitigated category B welds significantly lowers the potential for initiation and slows crack growth rates of any potential flaws".

In addition, the NRC noted the following:

> "Finally the NRC staff also considered that, for each of these welds, 100 percent coverage was obtained for circumferential flaws in the susceptible material, which is the structural integrity concern. Given the hardship identified above and the coverage obtained for each of these welds, the NRC staff finds the previous examinations of each of these welds are sufficient to meet the baseline inspection requirement of 10 CFR 50.55a(g)(6)(ii)(F)(3)".

DMW examinations performed at CCNPP, Unit 1 during the 2010 refueling outage employed phased array (PA) UT technology. Utilizing PA UT technology not only improves the overall effectiveness of the UT examination but also provides significant performance improvements when compared to fixed angle examination methodologies.

In 2010 all DMWs were examined utilizing Structural Integrity's proprietary manual PA procedure, SI-UT-130 R3. This procedure has been qualified in accordance with the requirements of Section XI, Appendix VIII, Supplement 10, for the manual PA UT examination technique. This technique has been Performance Demonstration Initiative-qualified to detect and characterize (length and depth size) service-induced damage in the form of Primary Water Stress Corrosion Cracking (PWSCC). The SI-UT-130 R3 procedure is also qualified to scan DMWs with single-sided access. This single-sided access qualification allows for full interrogation of DMWs that have CASS safe ends, or restrict scanning conditions from the opposite side. The application of PA UT technology allows for a reduction in the number of required examination scans across the surface of the component, while matching or exceeding the maximum achievable coverage of the weld and adjacent base material volume of any currently qualified ultrasonic technique. The capability of PA to provide increased examination coverage is inherently evident when applied to limited-access scanning surfaces.

Using the PA technique, examination coverage is greater than fixed angle techniques for constrained configurations. This is because the procedure employs a large number of discrete examination angles (including credit for a low angle of 30-degrees), which, in addition to increased examination coverage, provides superior material insonification by utilizing many different angular sound paths, thereby optimizing penetration into highly attenuative materials. The technique also includes a 10 degree electronic skew for circumferential scanning beam angles, which significantly improves examination coverage. Where improvement of coverage could be realized, CCNPP, Unit 1 has performed additional surface preparation.

The major limitation to achieving essentially 100 percent coverage and/or 100 percent coverage of the susceptible examination volume in 15 welds listed in Table 1A is the presence of CASS material. DMWs ≥ 12 inches NPS contain CASS safe ends on one side. No component qualification supplement is available in Section XI, Appendix VIII for CASS items. Therefore, the required examination volume was examined by Section XI, Appendix VIII, Supplement 10-qualified procedures to the maximum extent practical including 100 percent of the susceptible material volume (non-stainless steel volume). In the case of the 4 inch weld (118500/4-PS-1003-6), the geometry of the joint precluded achievement of 100 percent examination coverage of the weld and the susceptible material.

As specified in IWA-2232 (ASME Section XI, 2004 Edition, no Addenda), the ultrasonic examination of piping welds is required to be performed in accordance with Appendix I of Section XI of the ASME Code. Appendix I requires that ultrasonic examination procedures, equipment, and personnel are to be qualified by Performance Demonstration in accordance with Section XI, Appendix VIII. For examination of the CASS material, the requirements within Section XI, Appendix VIII are in the course of preparation and therefore require the use of Appendix III. Subsequently, the requirements for Appendix III, Paragraph III-1100 apply. Paragraph III-1100(c) allows alternative examination techniques, calibration block designs, and materials as provided in IWA-2240, except when the requirements of paragraph III-3430 apply. Paragraph III-3430 allows an alternate calibration block layout, provided similar beam paths are utilized, and allows additional reflectors provided they do not interfere with establishing the primary reference. Supplement 1 of Appendix III describes additional requirements for examination of austenitic and DMWs which are in

combination with cast materials. Supplement 1(b)(4) cautions that CASS materials may preclude meaningful examinations because of geometry and attenuation variables.

DMWs with CASS material were examined using procedures, equipment, and personnel which were qualified on samples containing real cracks, realistic configurations, and cast austenitic materials. The qualified examination process includes calibration requirements with similar ultrasonic beam paths, scanning sensitivity based on the maximum allowable within the materials, and an array of angles from 30 to 70 degrees. These examination processes are superior to the requirements of Appendix III which does not require qualification on blind samples containing real cracks or realistic configurations.

This examination process meets IWA-2240 because the application of PA techniques qualified under the rules of Section XI, Appendix VIII provides a superior examination with newly developed techniques that have been reviewed and demonstrated to the Authorized Nuclear Inservice Inspector.

Examination techniques to be used during the 2016 outage for the welds contained in Table 1A are expected to be similar to the techniques and procedure previously used in 2010.

The 12 unmitigated welds included in Table 1A are found in lower temperature regions of the reactor coolant system (at temperatures near T_{cold}). Therefore, there is a lower probability of crack initiation and a slower crack growth rate. These welds are also highly flaw tolerant, as demonstrated in MRP-109 (Reference 6). As shown in this reference, continued operation without repair can be demonstrated for substantial flaw sizes. The additional four welds have been mitigated by stress improvement, three of which are un-cracked, Inspection Item D, and one was identified as cracked prior to the stress improvement application, Inspection Item E.

It is also noted that each of the welds in Table 1A has received essentially 100 percent inspection coverage for potential circumferential flaws in the PWSCC susceptible material thereby mitigating any safety concern, as an axial PWSCC flaw will be arrested in the adjacent non-susceptible material. Flaw tolerance was further documented in the response to the request for additional information contained in Reference 7, which summarized a flaw tolerance that is bounding for all Reactor Coolant Pump (RCP) suction and discharge nozzle DMWs in Unit 1, of which only 30-RC-12A-10, an Inspection Item B weld, had 98 percent axial scan coverage for circumferential flaws of the susceptible material. Figure 7 (contained in Reference 7) showed that a >40% through-wall circumferential flaw with a crack depth to length ratio of 0.1 would still have 84 months before reaching ASME allowable crack depth. Code Case N-770-1 requires reexamination of these Inspection Item B welds on a periodicity not to exceed 84 months. In addition, all locations operating at hot leg temperature or greater have been mitigated with stress improvement.

Where appropriate, contouring has already been completed on the examination surface. Further actions are limited by the design minimum wall calculations for the piping. Additional axial flaw coverage would require a weld build-up of the DMW followed by additional contouring and a Construction Code required radiography examination. This welding and additional contouring to improve axial coverage is a hardship that does not result in an increase to health and safety of the public.

Additionally, bare metal visual examinations in accordance with ASME Code Case N-722-1 and N-770-1 will continue to be performed. During refueling outages, qualified examiners walk down Class 1 systems at pressurized conditions and cold shutdown conditions. These walk-downs are performed to satisfy ASME Code pressure testing requirements and the Boric Acid Corrosion Control Program. Adverse conditions are addressed by the station's corrective action program.

Therefore, the UT examination coverages, which include a large percentage of the susceptible material for circumferential and axial flaws, combined with the periodic system pressure tests and outage walk downs, provide an acceptable level of quality and safety for identifying degradation from PWSCC prior to the development of a safety significant flaw.

Pre-emptive relief is requested for the 16 welds presented in Table 1A in order to mitigate potential plant startup restraints, following the 2016 Unit 1 outage. The 2016 examinations are expected to obtain coverage similar to the coverage obtained during the 2010 examinations. Due to the current state of the art of UT examination of DMWs involving CASS components associated with 15 welds and the geometric limitation of one weld, it is anticipated that the examination coverage requirements of Code Case N-770-1, and those for essentially 100 percent coverage, is likely not to be achieved. The DMWs in this request have a lower potential for initiation of PWSCC, a slower crack growth rate for any potential flaw, and they have achieved the maximum practical amount of examination coverage. In summary, CCNPP Unit 1 has demonstrated an acceptable level of quality and safety.

6.0 DURATION OF PROPOSED ALTERNATIVE

This relief request is applicable for the remainder of the current interval which will conclude on June 30, 2019.

7.0 REFERENCES

1. Internal U.S. Nuclear Regulatory Commission Memorandum from T. Lupold (Chief, Piping and NDE Branch) to J. Collins (Senior Materials Engineer, Piping and NDE Branch), "Summary of Public Meeting Between the Nuclear Regulatory Commission Staff and Industry Representatives on Implementation of ASME Code Case N-770-1," dated August 12, 2011 (ML112240818)

2. Letter from J. Stanley (CENG) to U.S. Nuclear Regulatory Commission, "Relief Request for Unit 1 Dissimilar Metal Butt Welds Baseline Examinations (RR-ISI-04-06A)," dated February 9, 2012 (ML12044A020)

3. Letter from J. Stanley (CENG) to U.S. Nuclear Regulatory Commission, "Relief Request for Unit 2 Dissimilar Metal Butt Welds Baseline Examinations (RR-ISI-04-07A)," dated June 7, 2012 (ML12164A372)

4. Letter from G. Wilson (U.S. Nuclear Regulatory Commission) to G. Gellrich (Calvert Cliffs Nuclear Power Plant, LLC), "Calvert Cliffs Nuclear Power Plant, Unit No. 1- Relief Request RR-ISI-04-06 from ASME Code Case N-770-1 Inspection Coverage Requirement for Volumetric Examination of Reactor System Dissimilar Metal Butt Welds (TAC No. ME7791)," dated December 19, 2012 (ML12345A055)

5. Letter from S. Meighan (U.S. Nuclear Regulatory Commission) to G. Gellrich (Calvert Cliffs Nuclear Power Plant, LLC), "Calvert Cliffs Nuclear Power Plant, Unit No. 2 – Relief Request RR-ISI-04-07A for Dissimilar Metal Butt Welds Baseline Examinations (TAC No. ME8871)," dated May 29, 2013 (ML13141A647)

6. "Materials Reliability Program Alloy 82/182 Pipe Butt Weld Safety Assessment for U.S. PWR Plant Designs (MRP-109) Westinghouse and CE Design Plants," dated April 2005, Electric Power Research Institute

7. Letter from J. Stanley (CENG) to U.S. Nuclear Regulatory Commission, "Response to Request for Additional Information - Relief Request RR-ISI-04-07A, Dissimilar Metal Butt Welds Baseline Examinations," dated February 18, 2013 (ML13051A740)

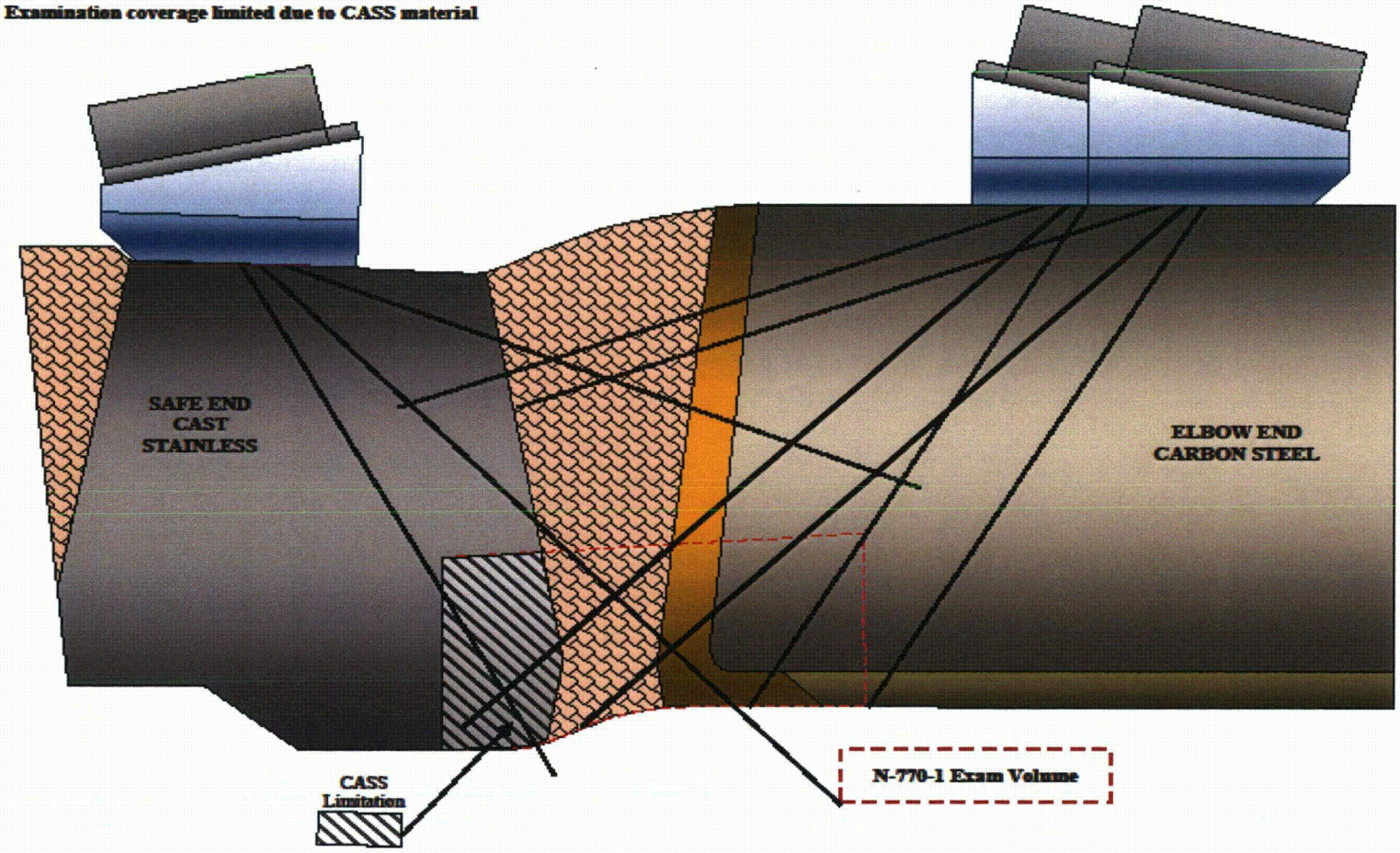
Attachment 2

Examination Coverage Plots

CCNPP Unit 1
N-770-1 Based Examination Coverage

102300 / 30-RC-11A-7

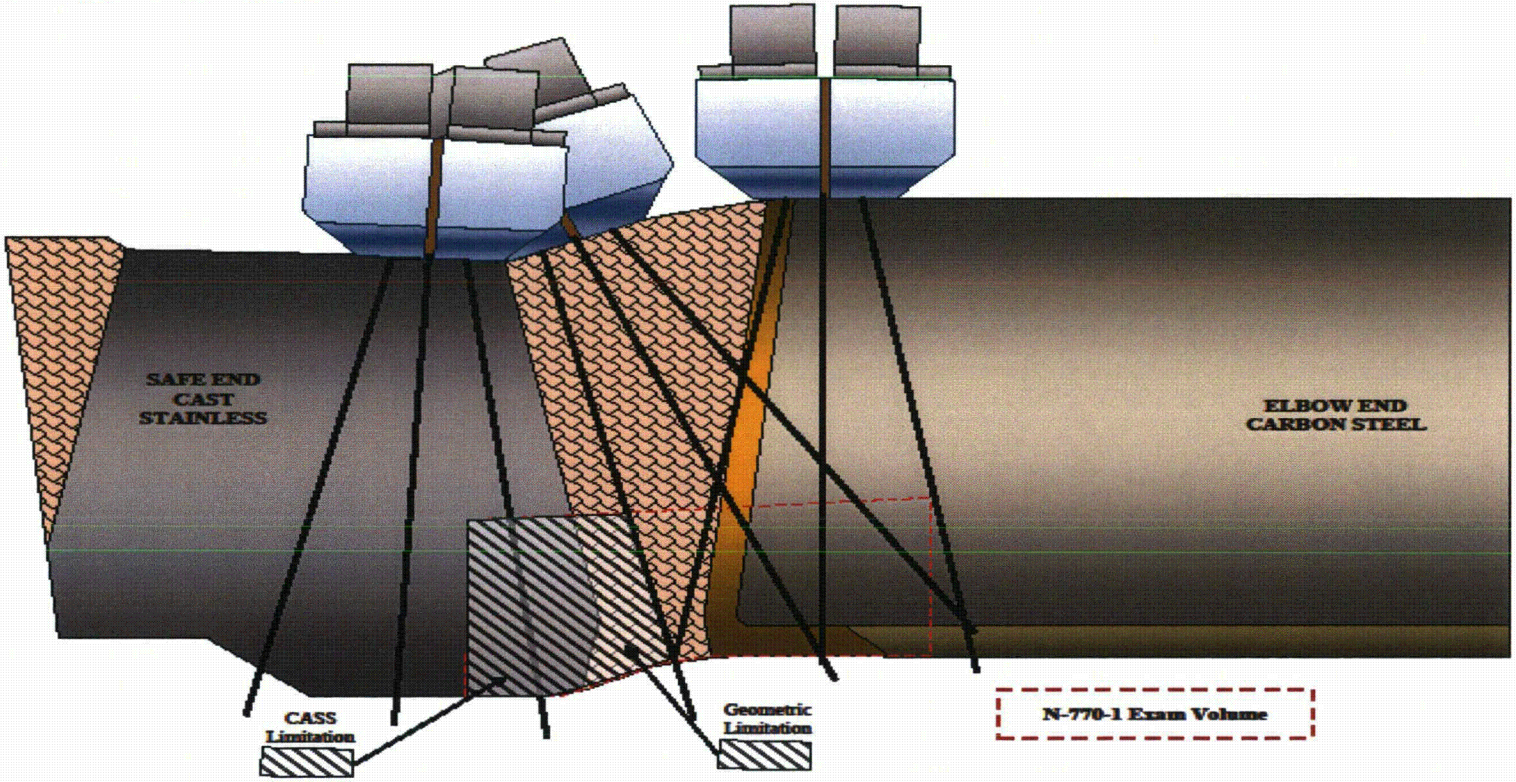
Examination coverage limited due to CASS material



CCNPP Unit 1
N-770-1 Based Examination Coverage

102300 / 30-RC-11A-7

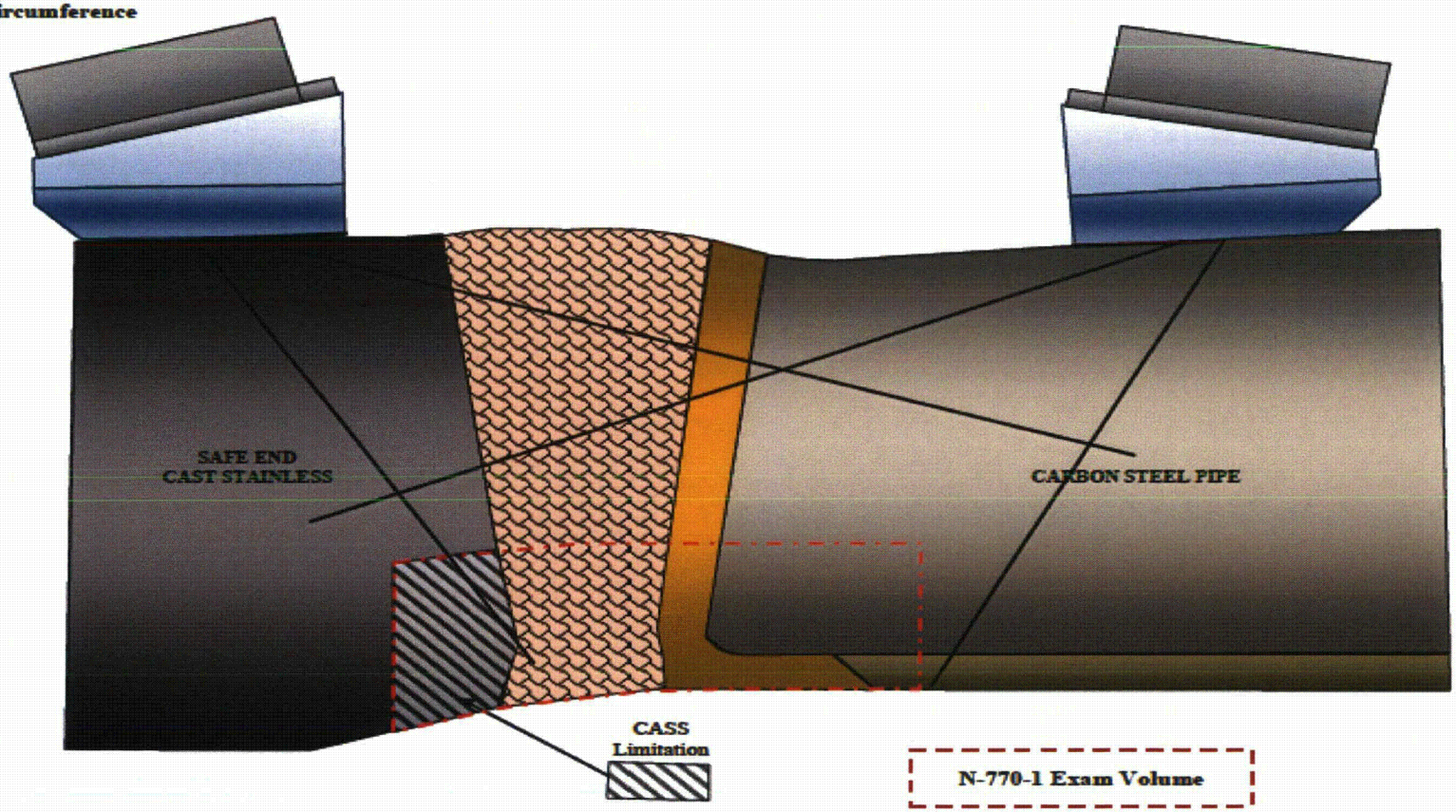
Examination coverage limited due to CASS material and existing geometric configuration



CCNPP Unit 1
N-770-1 Based Examination Coverage

102450 / 30-RC-11A-10

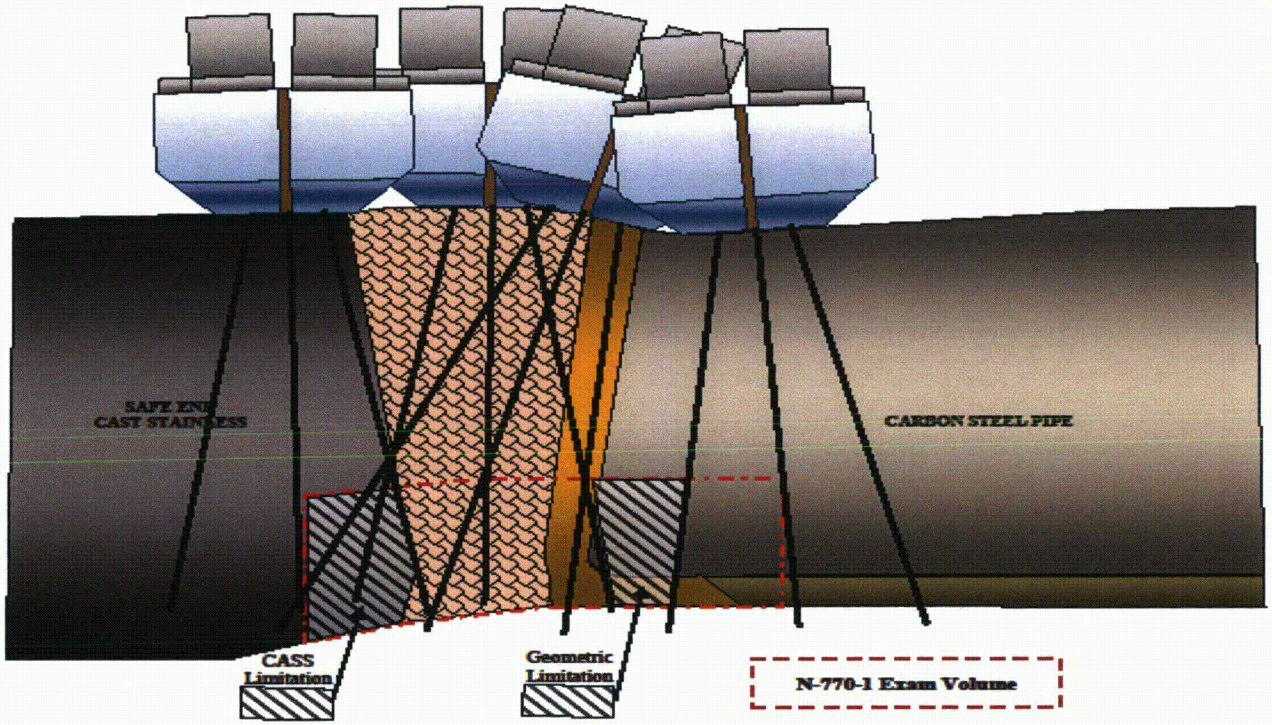
Examination coverage limited due to CASS material and Cold Leg Spray nozzle obstruction for 6.5" of total circumference



CCNPP Unit 1
N-770-1 Based Examination Coverage

102450 / 30-RC-11A-10

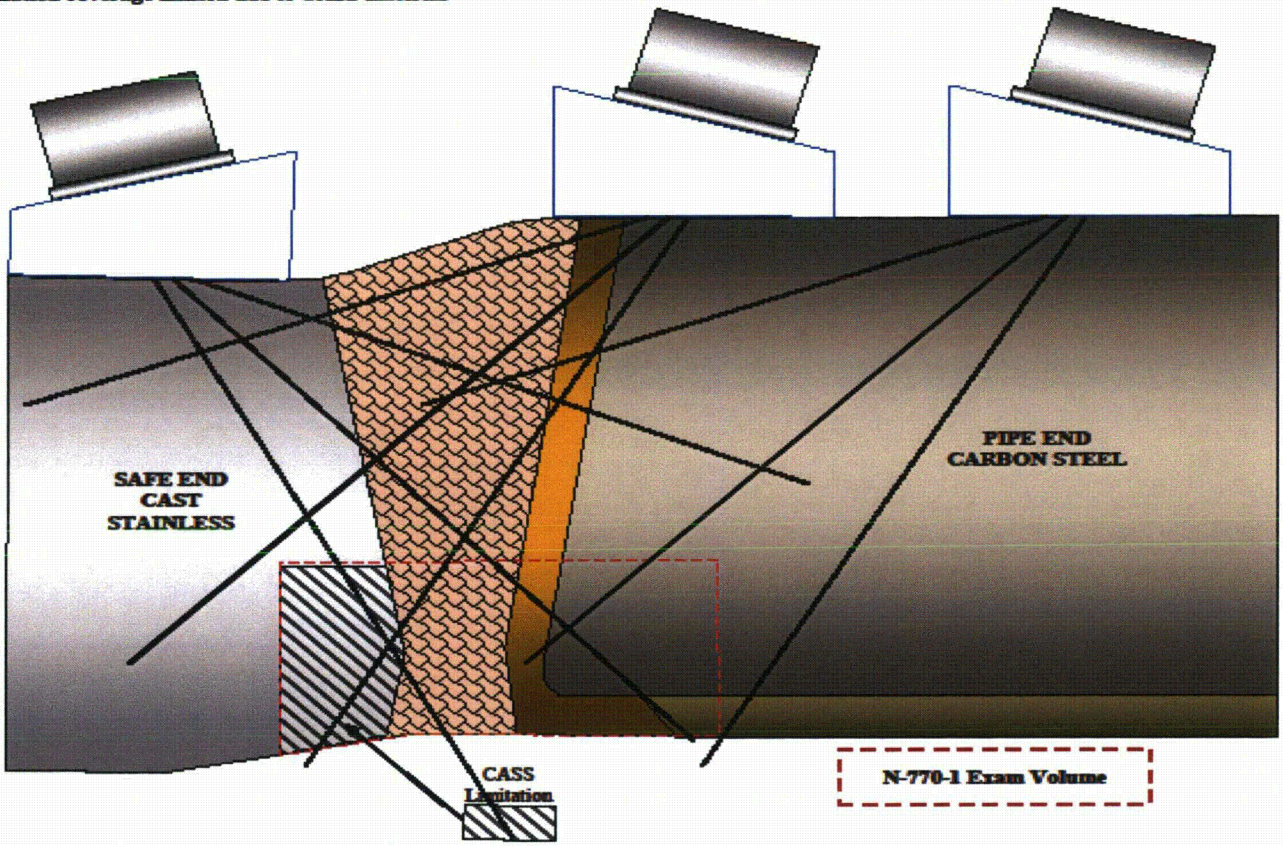
Examination coverage limited due to CASS material and existing geometric configuration



CCNPP Unit 1
N-770-1 Based Examination Coverage

104550 / 30-RC-11B-7

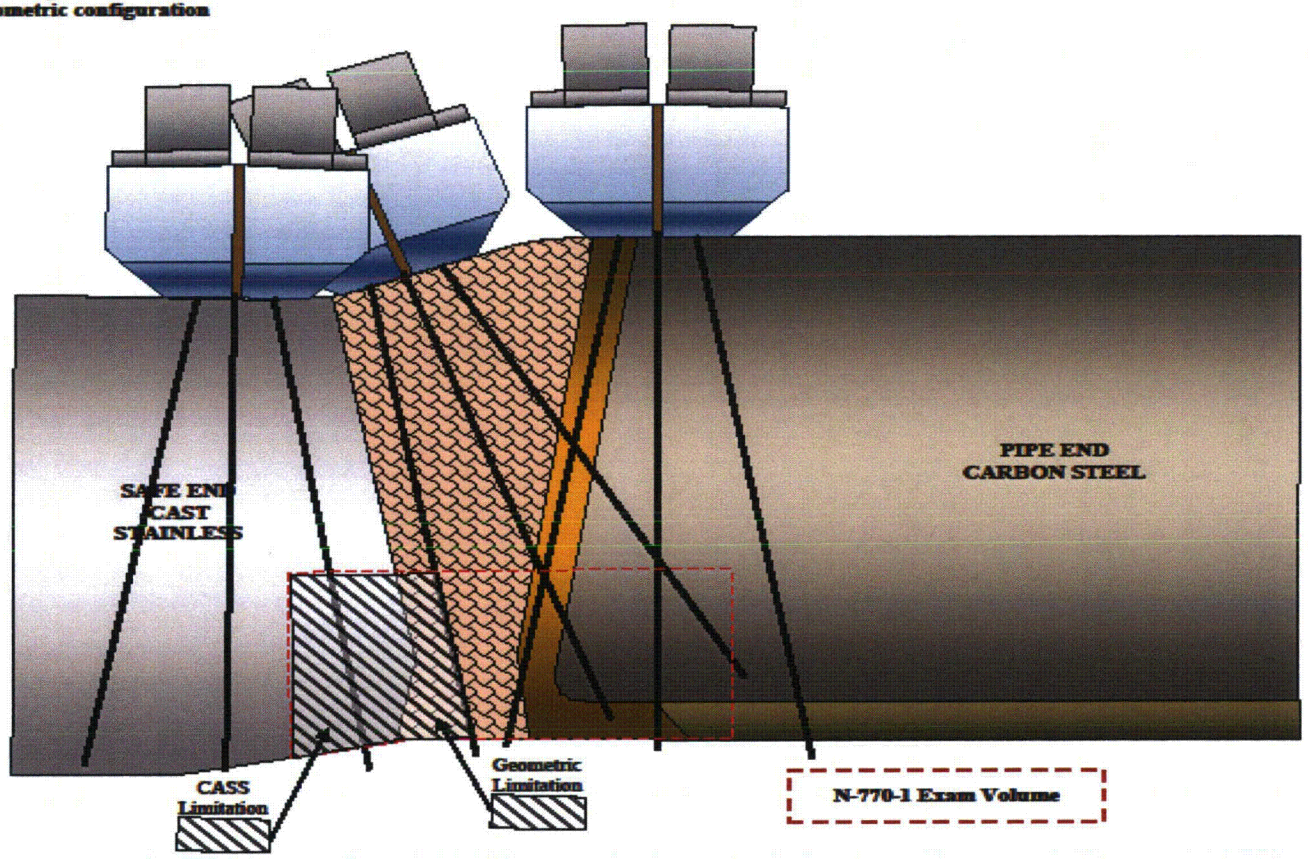
Examination coverage limited due to CASS material



CCNPP Unit 1
N-770-1 Based Examination Coverage

104550 / 30-RC-11B-7

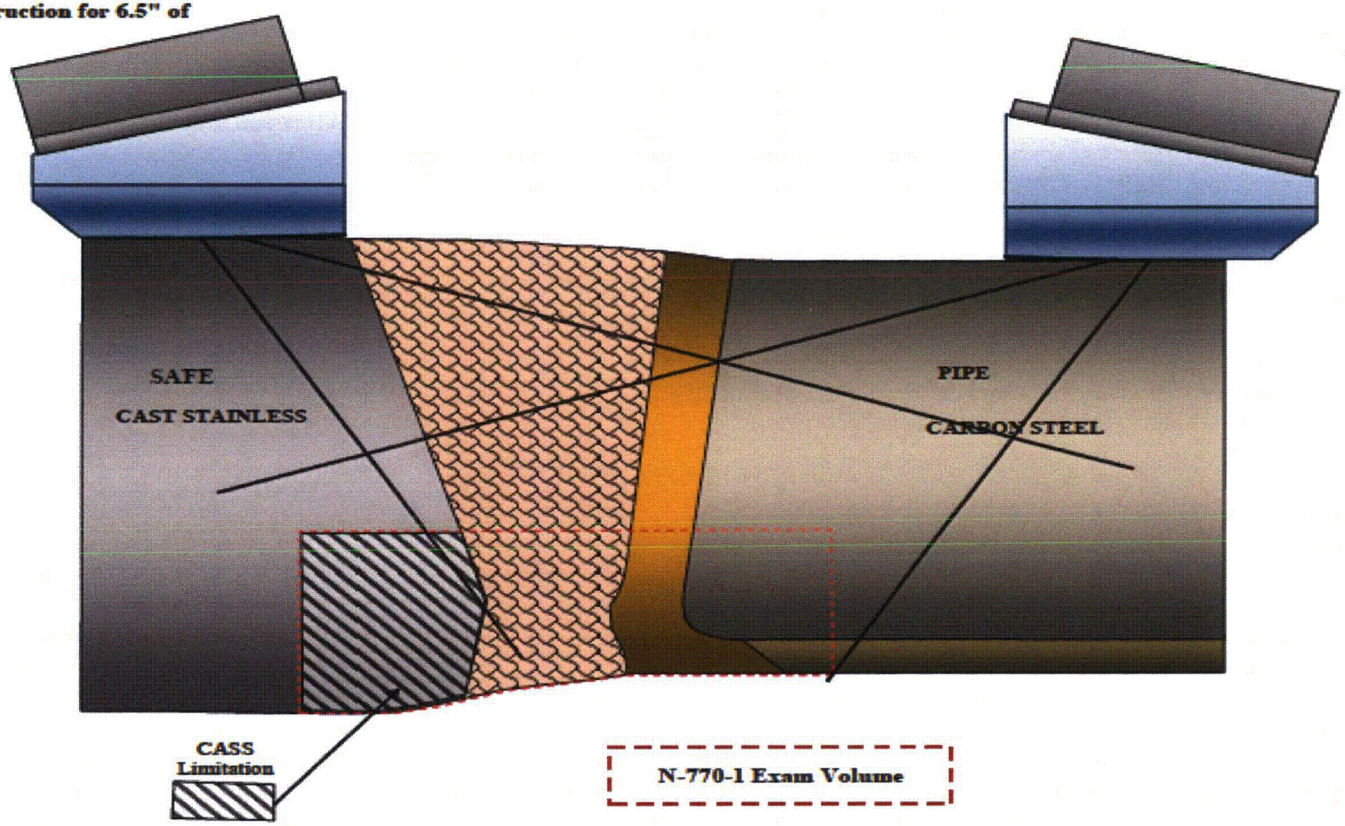
Examination coverage limited due to CASS material and existing geometric configuration



CCNPP Unit 1
N-770-1 Based Examination Coverage

104700 / 30-RC-11B-10

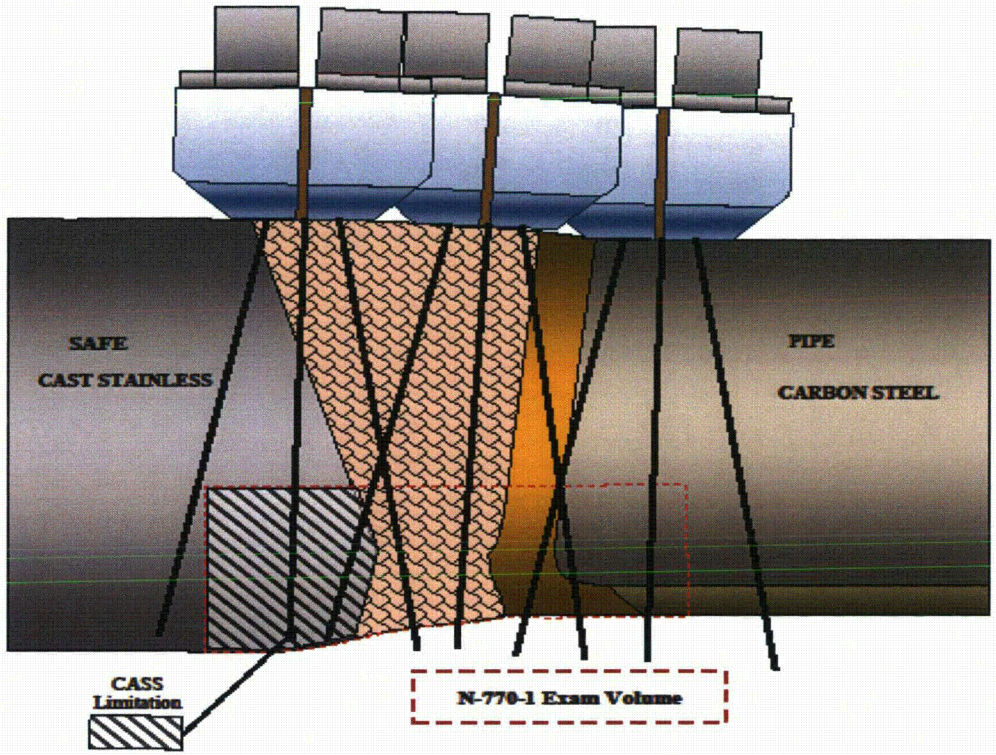
Examination coverage limited due to CASS material and Cold Leg Spray nozzle obstruction for 6.5" of total circumference



CCNPP Unit 1
N-770-1 Based Examination Coverage

104700 / 30-RC-11B-10

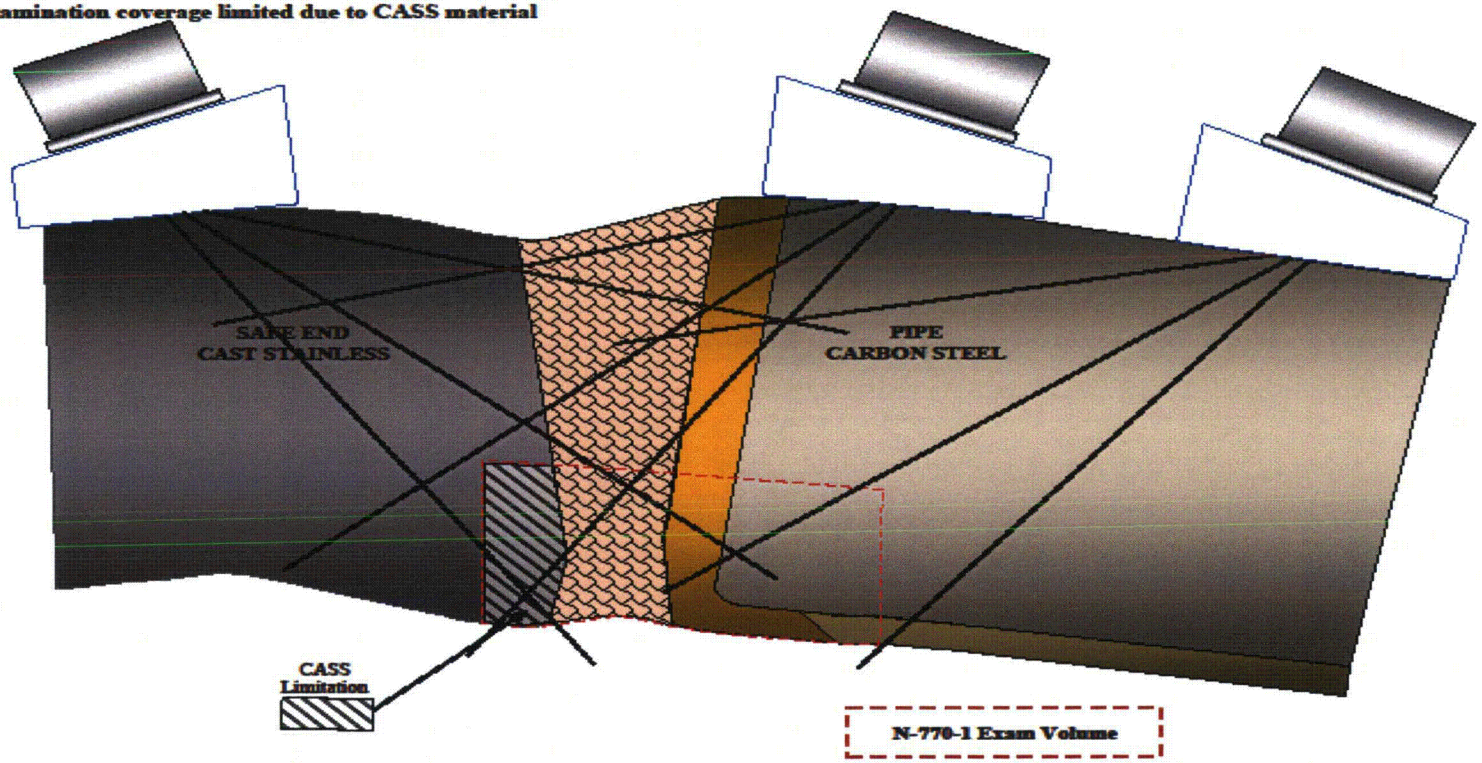
Examination coverage limited due to CASS material



CCNPP Unit 1
N-770-1 Based Examination Coverage

107450 / 30-RC-12A-7

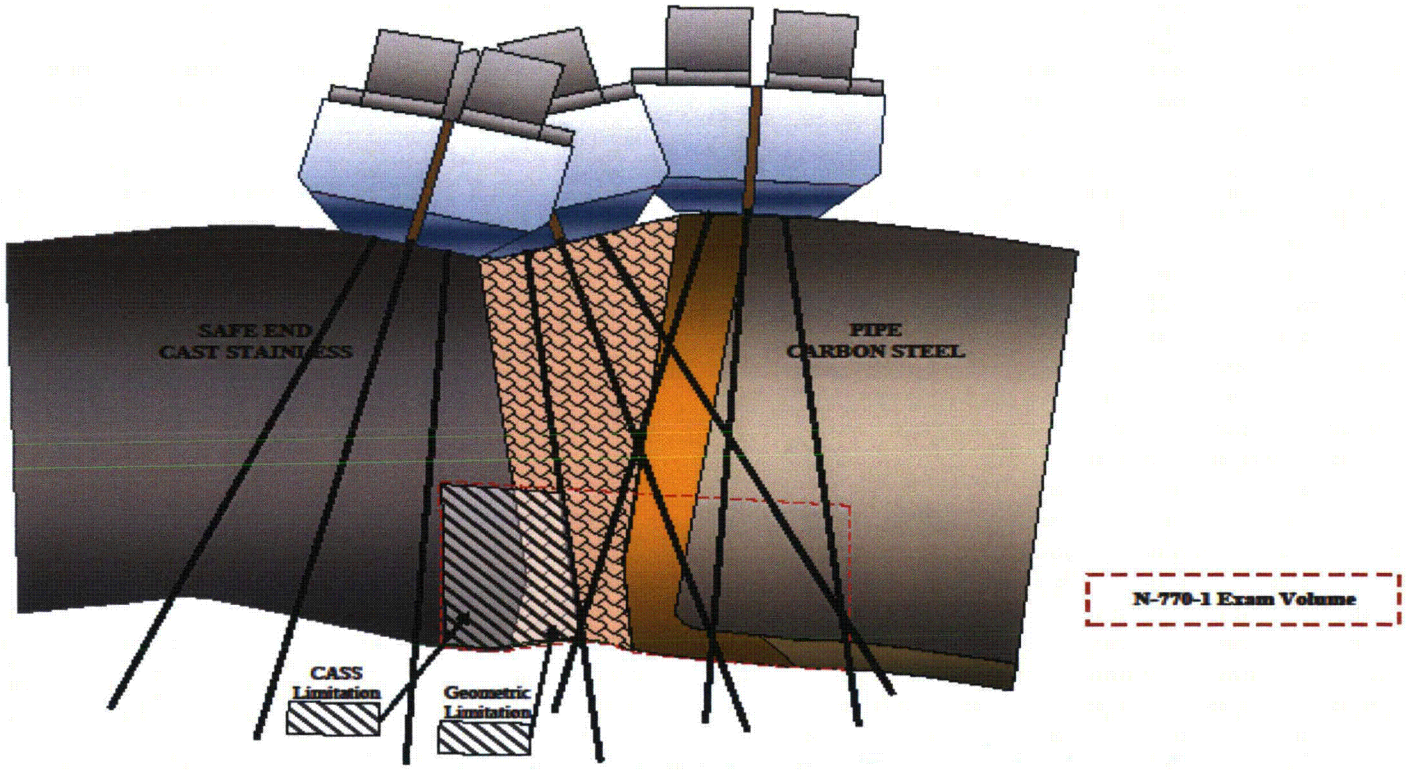
Examination coverage limited due to CASS material



CCNPP Unit 1
N-770-1 Based Examination Coverage

107450 / 30-RC-12A-7

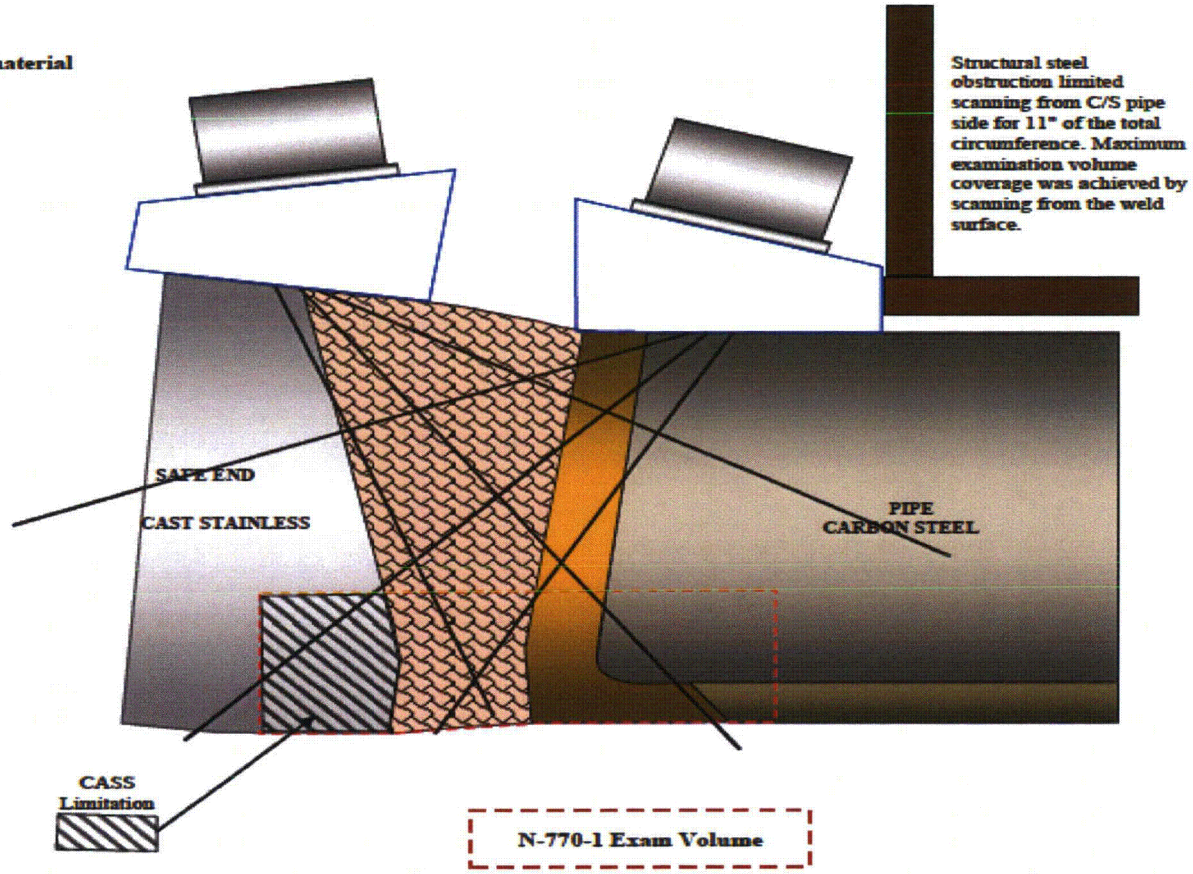
Examination coverage limited due to CASS material and existing geometric configuration



CCNPP Unit 1
N-770-1 Based Examination Coverage

107600 / 30-RC-12A-10

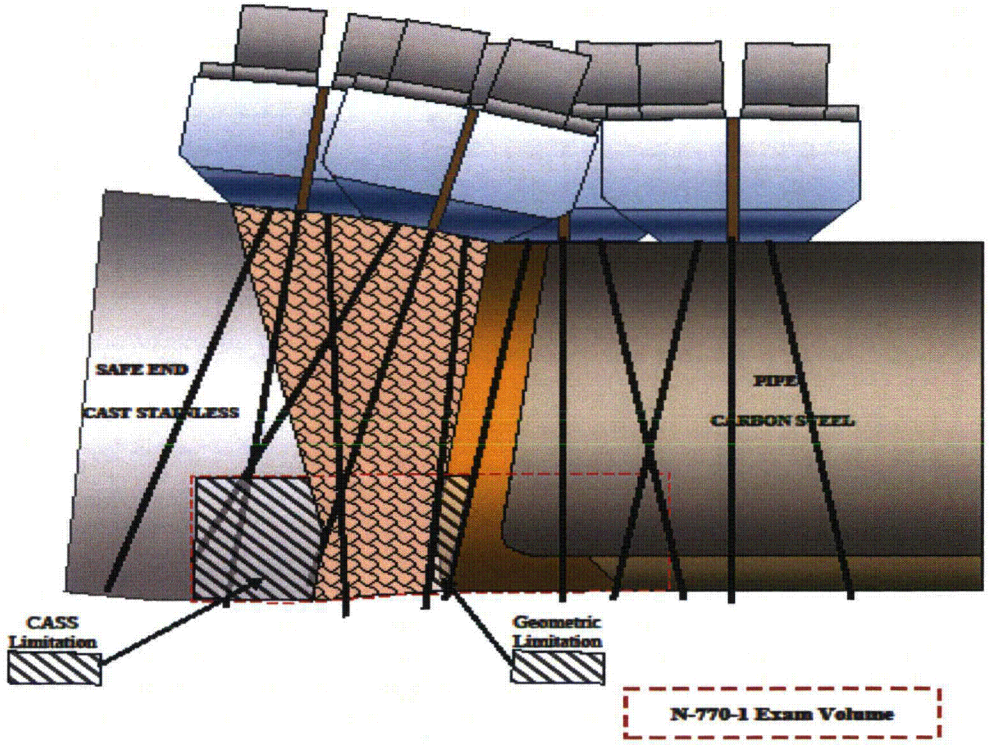
Examination coverage limited due to CASS material and structural steel support



CCNPP Unit 1
N-770-1 Based Examination Coverage

107600 / 30-RC-12A-10

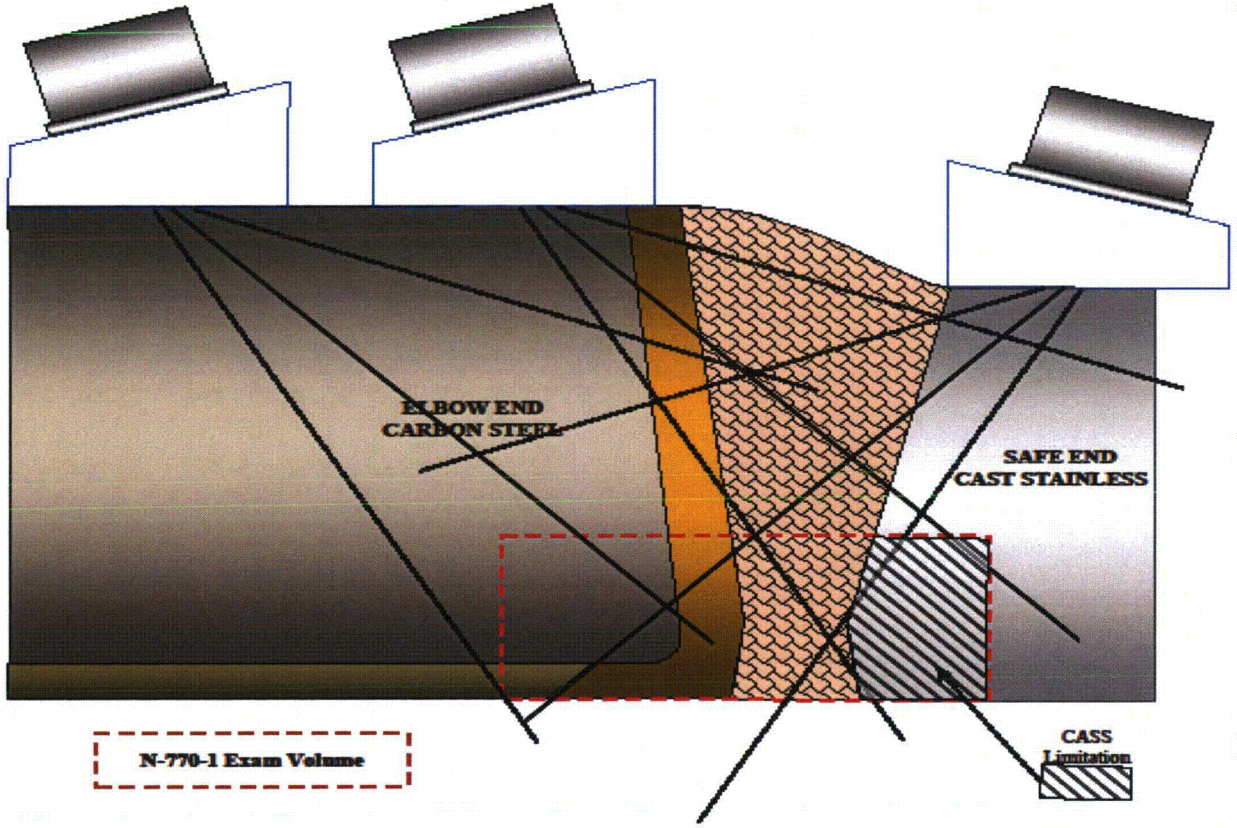
Examination coverage limited due to CASS material and existing geometric configuration



CCNPP Unit 1
N-770-1 Based Examination Coverage

109600 / 30-RC-12B-7

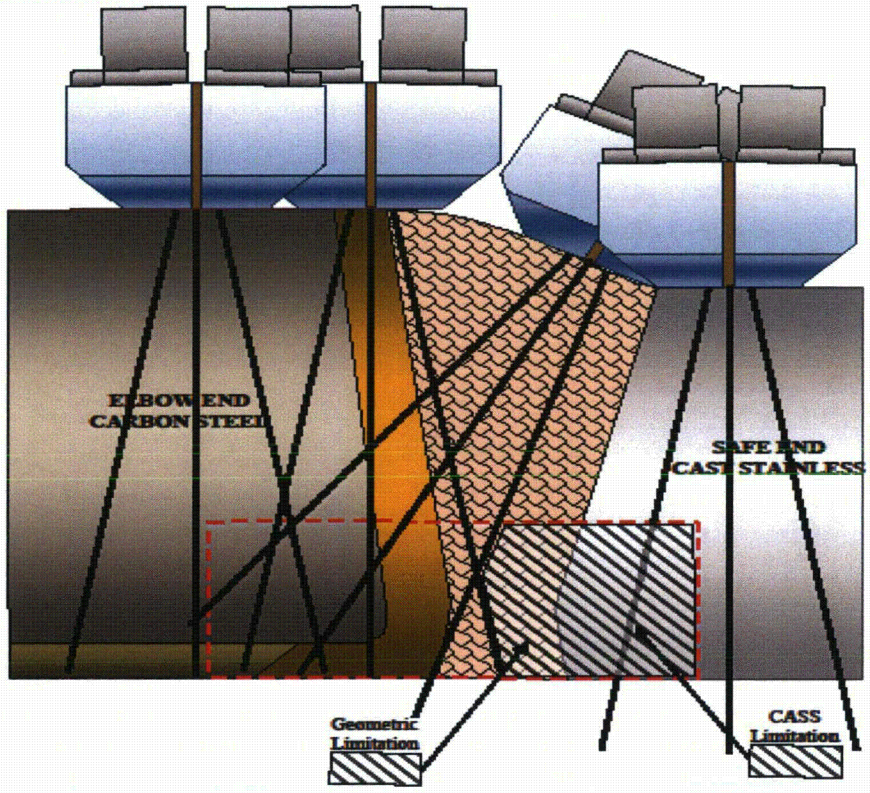
Examination coverage limited due to CASS material



CCNPP Unit 1
N-770-1 Based Examination Coverage

109600 / 30-RC-12B-7

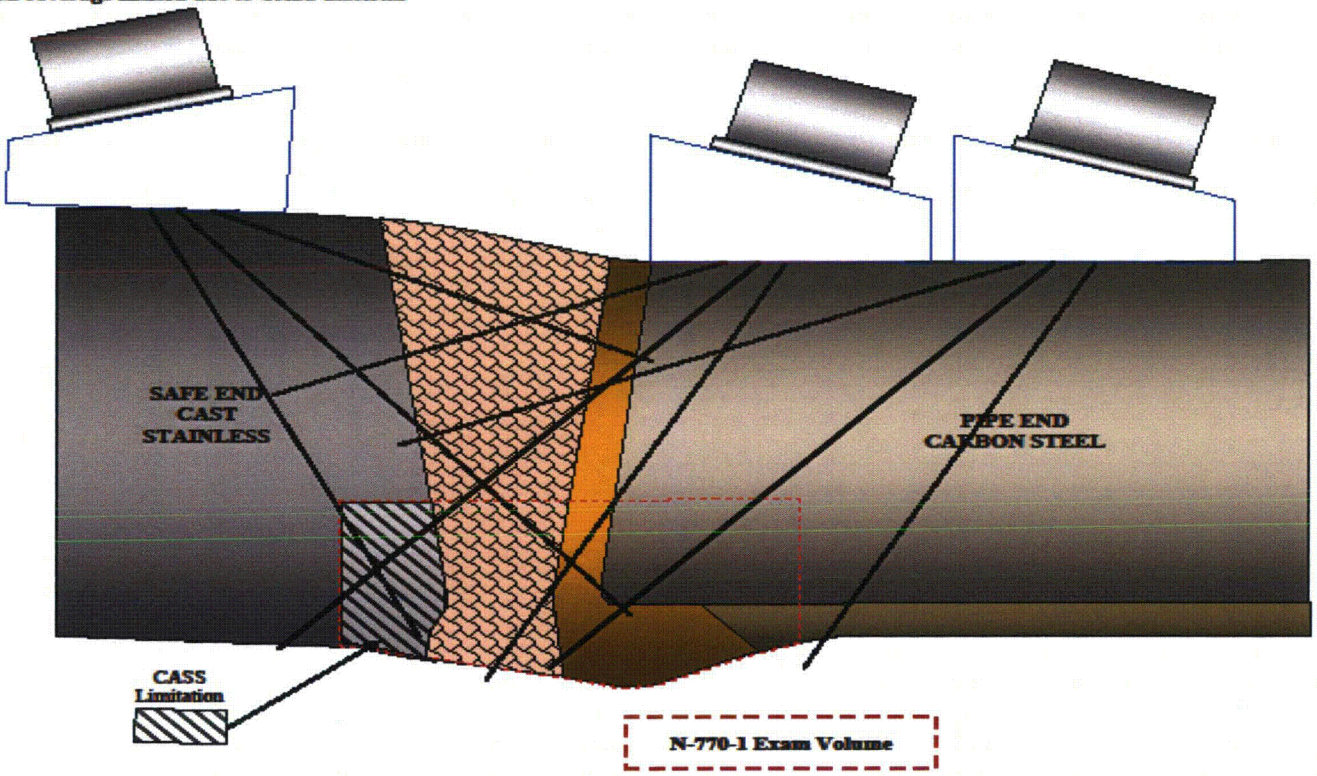
ASME Sec XI Coverage limited due to CASS material and existing geometric configuration



CCNPP Unit 1
N-770-1 Based Examination Coverage

109750 / 30-RC-12B-10

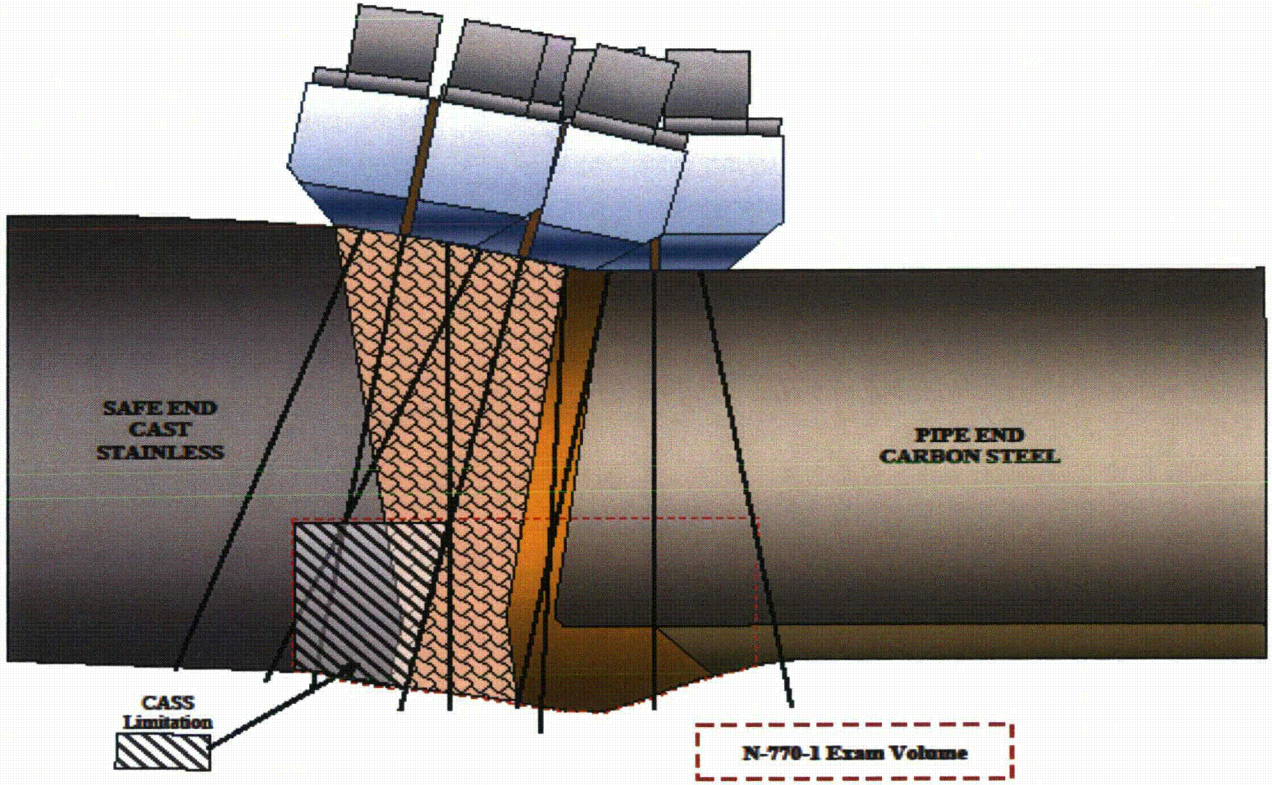
Examination coverage limited due to CASS material



CCNPP Unit 1
N-770-1 Based Examination Coverage

109750 / 30-RC-12B-10

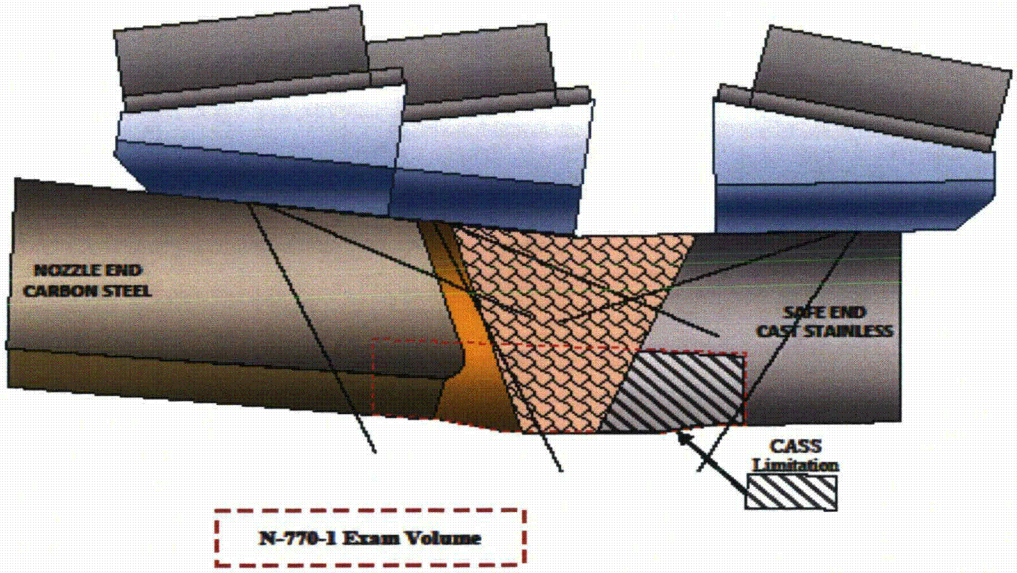
Examination coverage limited due to CASS material



CCNPP Unit 1
N-770-1 Based Examination Coverage

110450 / 12-PSL-1

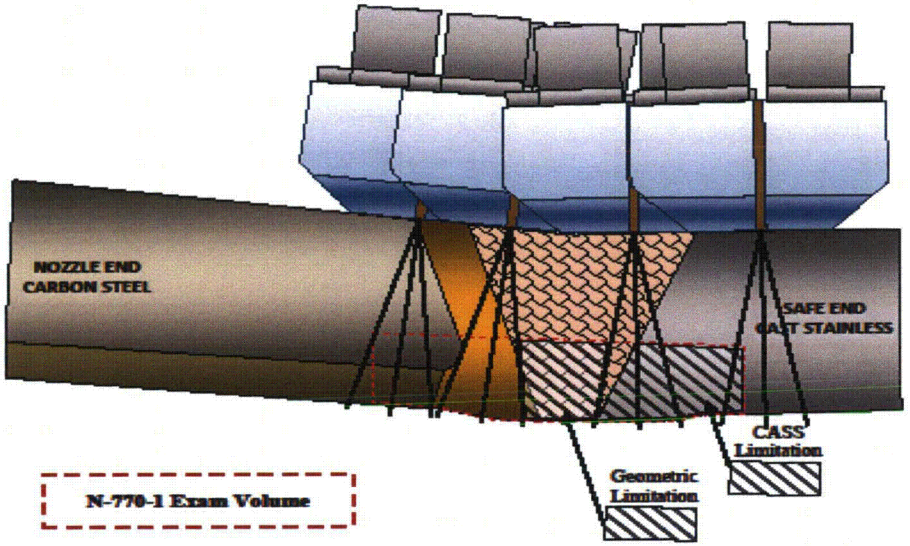
Examination coverage limited due to CASS material



CCNPP Unit 1
N-770-1 Based Examination Coverage

110450 / 12-PSL-1

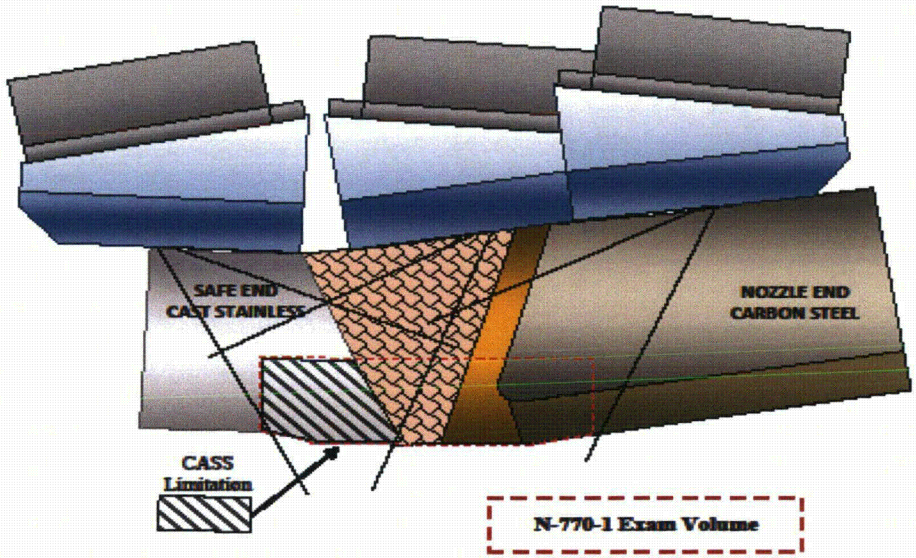
Examination coverage limited due to CASS material and existing geometric configuration



CCNPP Unit 1
N-770-1 Based Examination Coverage

111100 / 12-PSL-13

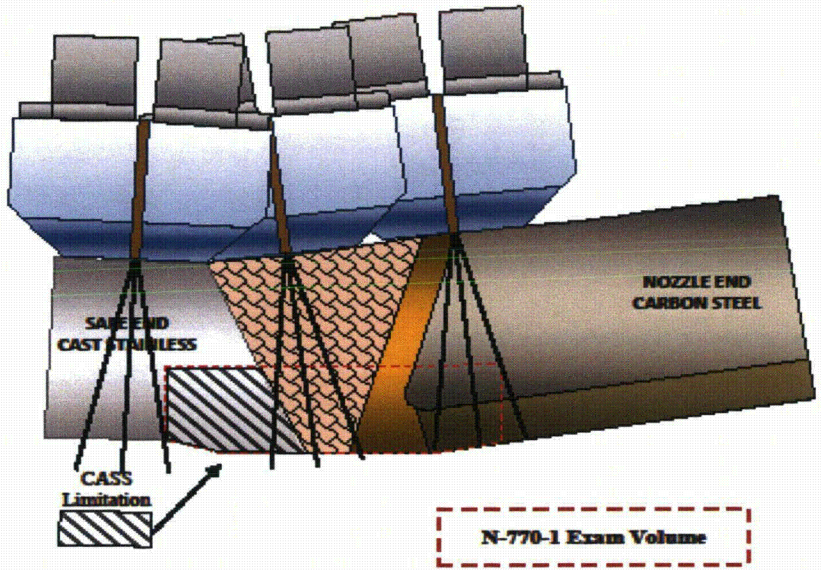
Examination coverage limited due to CASS material



CCNPP Unit 1
N-770-1 Based Examination Coverage

111100 / 12-PSL-13

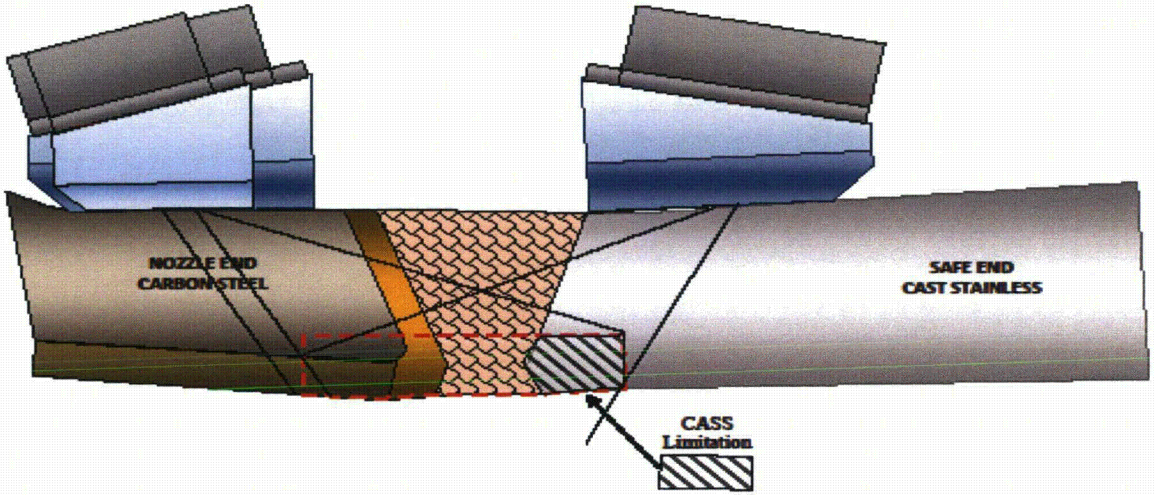
Examination coverage limited due to CASS material



CCNPP Unit 1
N-770-1 Based Examination Coverage

113150 / 12-SC-1004-1

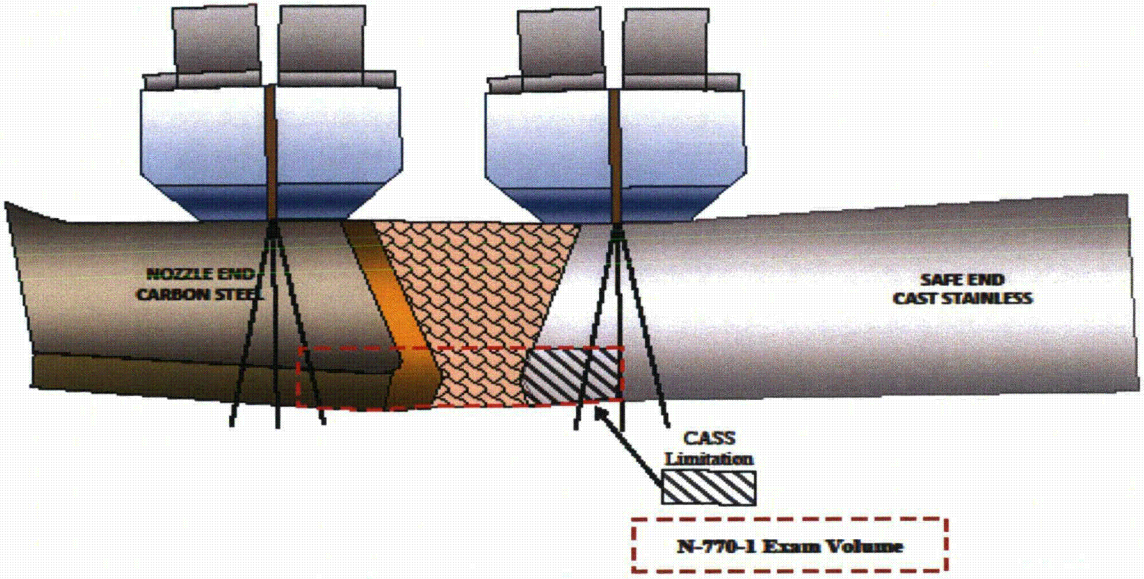
Examination coverage limited due to CASS material



CCNPP Unit 1
N-770-1 Based Examination Coverage

113150 / 12-SC-1004-1

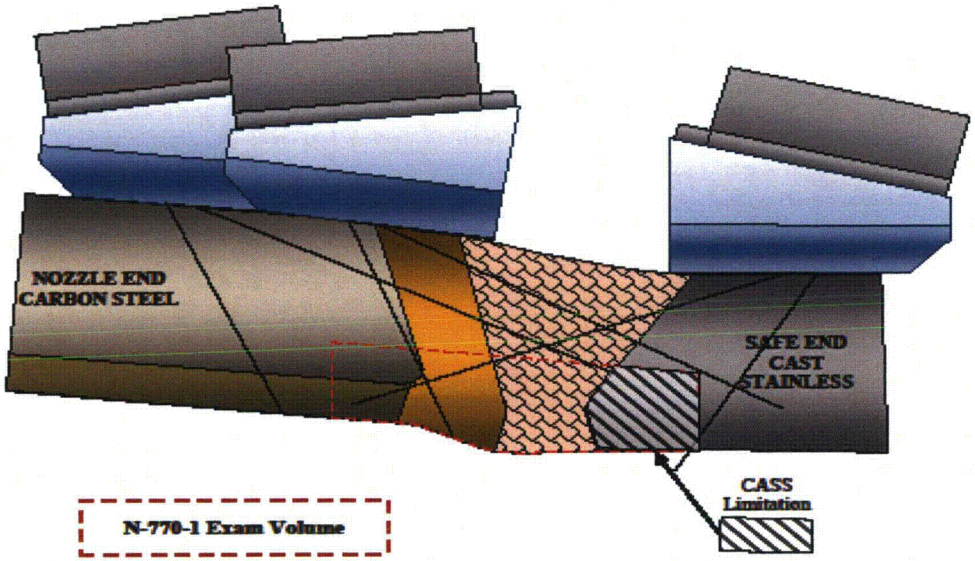
Examination coverage limited due to CASS material



CCNPP Unit 1
N-770-1 Based Examination Coverage

114350 / 12-SI-1009-16

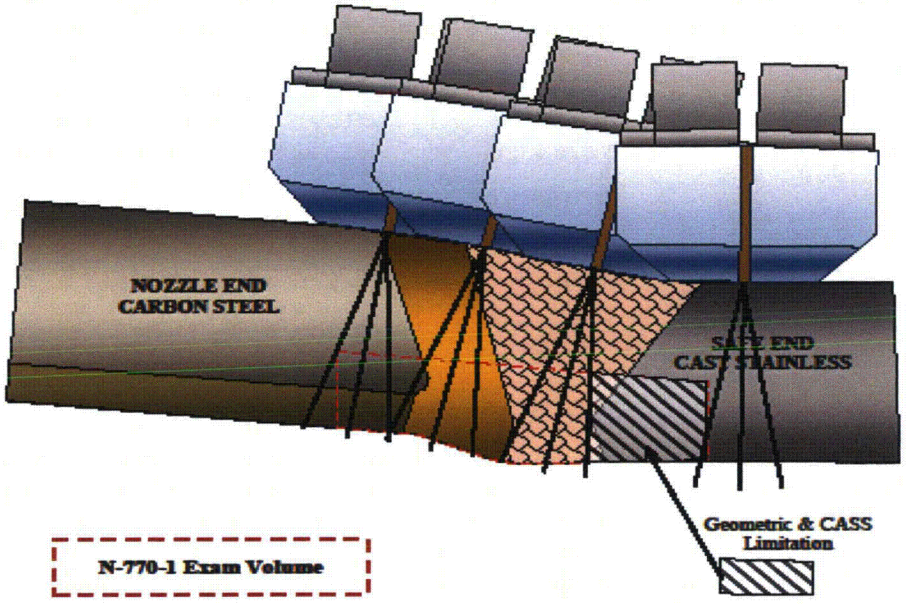
Examination coverage limited due to CASS material



CCNPP Unit 1
N-770-1 Based Examination Coverage

114350 / 12-SI-1009-16

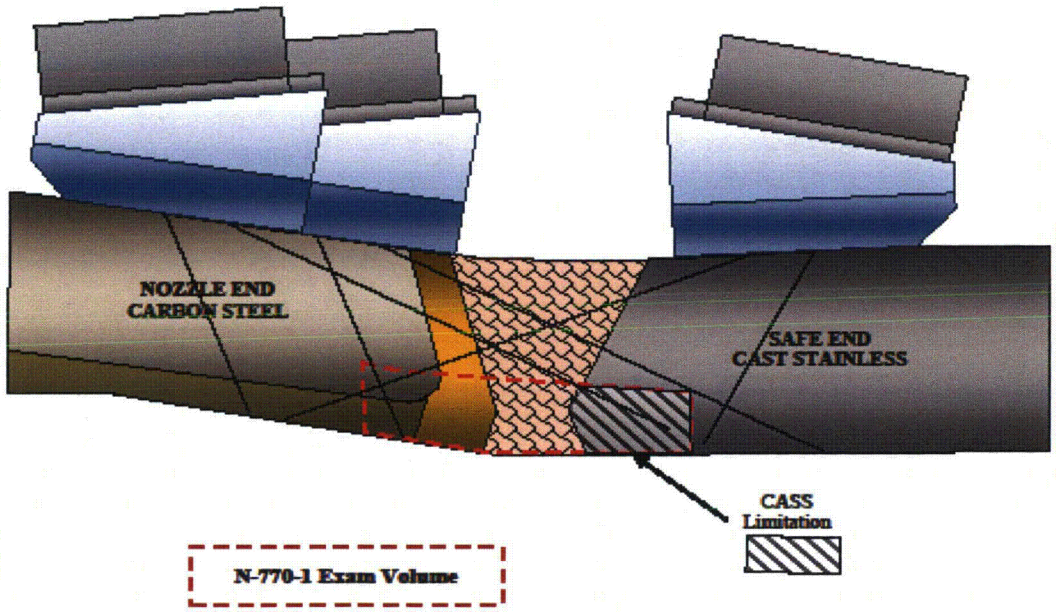
Examination coverage limited due to CASS material and existing geometric configuration



CCNPP Unit 1
N-770-1 Based Examination Coverage

116000 / 12-SI-1011-13

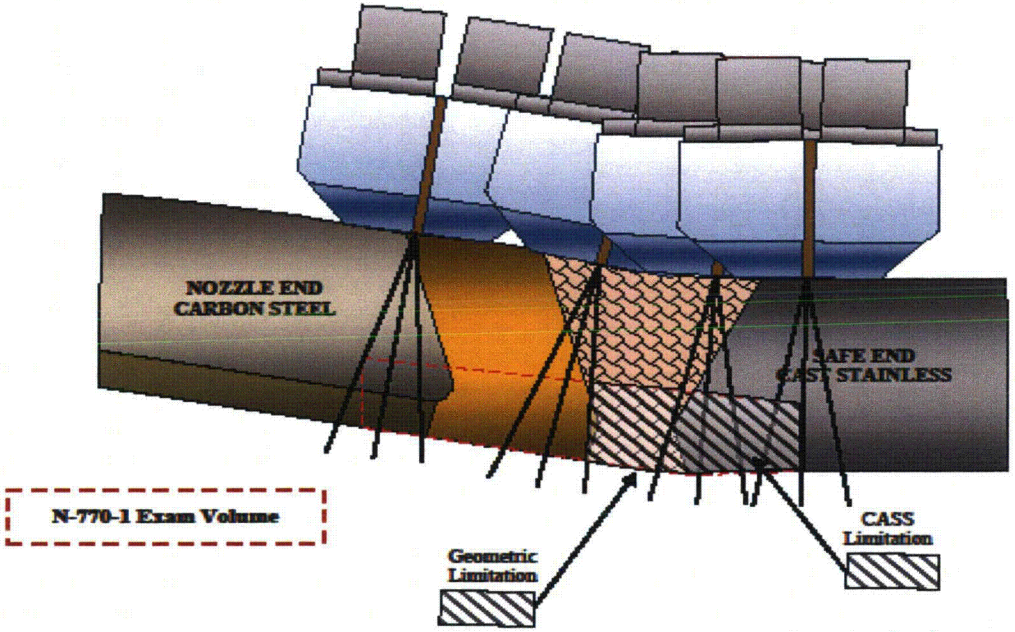
Examination coverage limited due to CASS material



CCNPP Unit 1
N-770-1 Based Examination Coverage

115200 / 12-SI-1010-14

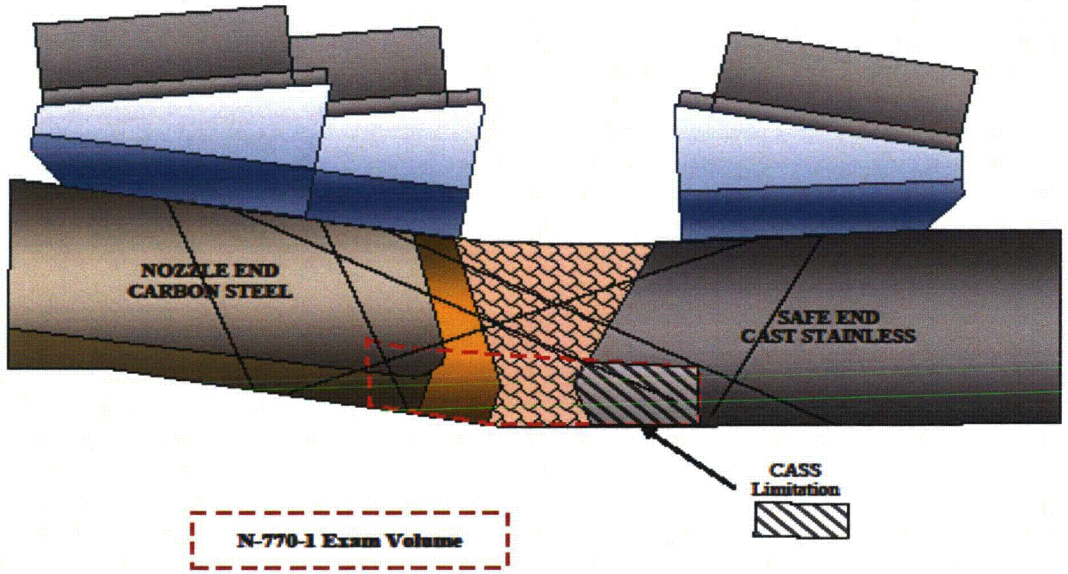
Examination coverage limited due to CASS material and existing geometric configuration



CCNPP Unit 1
N-770-1 Based Examination Coverage

116000 / 12-SI-1011-13

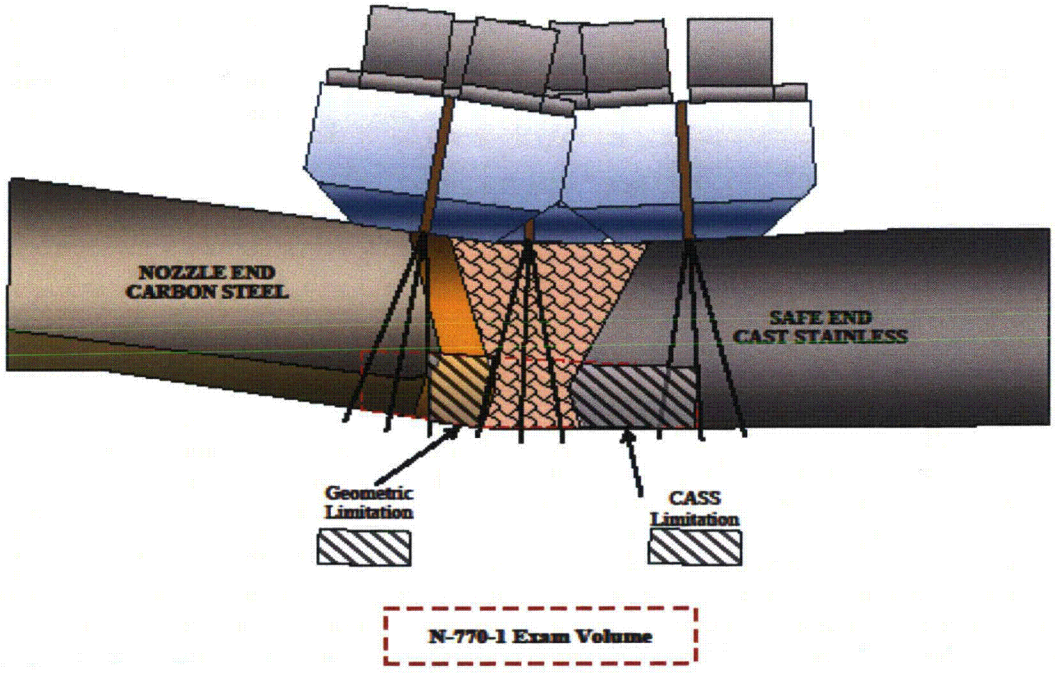
Examination coverage limited due to CASS material



CCNPP Unit 1
N-770-1 Based Examination Coverage

116000 / 12-SI-1011-13

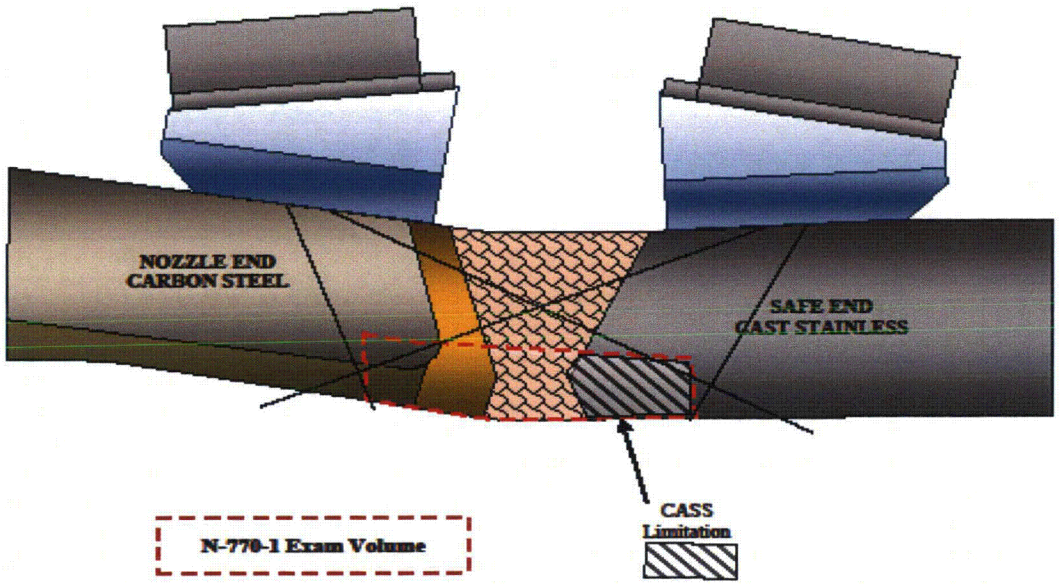
Examination coverage limited due to CASS material and existing geometric configuration



CCNPP Unit 1
N-770-1 Based Examination Coverage

116750 / 12-SI-1012-13

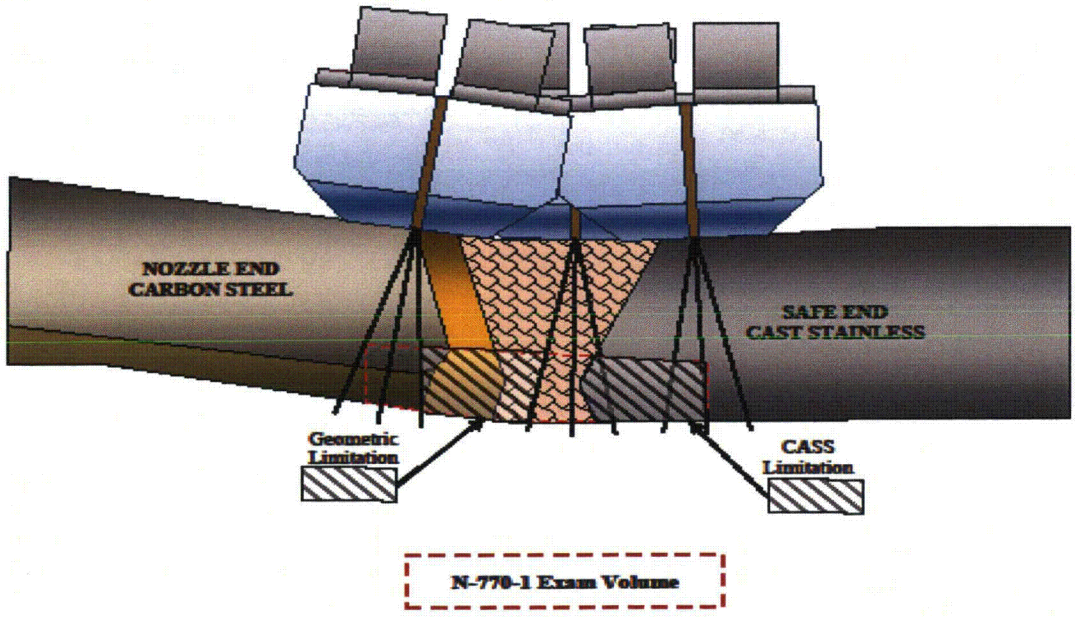
Examination coverage limited due to CASS material



CCNPP Unit 1
N-770-1 Based Examination Coverage

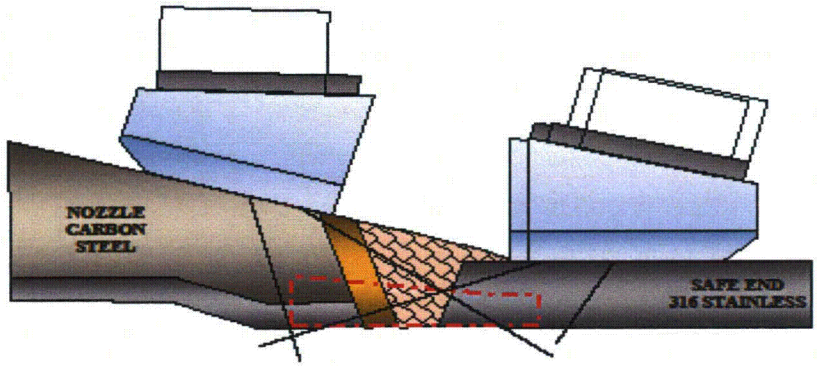
116750 / 12-SI-1012-13

Examination coverage limited due to CASS material and existing geometric configuration



CCNPP Unit 1
N-770-1 Based Examination Coverage

118500 / 4-PS-1003-6



CCNPP Unit 1
N-770-1 Based Examination Coverage

118500 / 4-PS-1003-6

Examination coverage limited due to existing geometric configuration