Joe Diamaro

FROM W. J. DRAKE
ROCKDALE OPERATIONS

TO MR. R. C. RAWE
KNOXVILLE OFFICE

1991 September 23

RE: 1991 EXTERNAL SAFETY AND INDUSTRIAL HYGIENE AUDIT - ROCKDALE

The Rockdale Operations Safety and Health Lead Team (OSHLT) has completed a review of our 1991 External Safety and Industrial Hygiene Audit Final Report. The Audit was conducted in May of this year and the Final Report was received during late August. The auditors who participated were as follows:

R. W. Barr - Pittsburgh
D. T. Hentges - Addy
J. V. Hoffman - ATC
J. S. Whitehead - Warrick
R. Williams - Kwinana
P. T. Woerz - Warrick

Based on their evaluation of fifty-five (55) elements of our Safety and Industrial Hygiene Process, our OSHLT has prioritized the areas needing improvement during the next three-year period. For 1992, the major emphasis areas are as shown on the attached sheet. Insuring linkage with the Smelting Division's three-five year milestones was an im[illegible] identification [illegible]

It should be noted that though these elements have been targeted for improvement in 1992, there are many, many other elements of our Safety and Industrial Hygiene Process that also must be sustained throughout the year (and beyond). An internal audit will be conducted in the Third Quarter of 1992 to insure that we sustain a comprehensive safety effort.

If you have any questions or concerns about our plan, please contact us immediately.

W. J. DRAKE

WJD/mcz

Attachment

C60709 0579

ALCOA

SF-4563 (REV 85-7)

ROCKDALE OPERATIONS
1992 General Plan for Improvement

Basis of Plan: The 1991 External Safety and Industrial Hygiene Audit

Hazard and Engineering Controls

	Vb.	Planned Safety Inspection Program
*	Ve.	Asbestos Removal Procedures
*	Vf.	Fall Protection and Prevention Programs/Practices
*	Vd.	Tagout/Lockout/Isolation Procedures
*	Vg.	Mobile Equipment Safety Practices and Programs
	Vl.	Personal Protective Equipment
*		Electrical Safety Improvements (though not specifically audited)

* Teams Appointed

Work Practice Controls

VIIc. Job Safety Analysis
VIIe. Planned Safety Observations

Training

VIIIb. Develop Training Plans
VIIIc. Special Training Efforts
VIIIf. Transferred Employee Orientation
(all with improved documentation)

Communications

A) Improved safety fix-it systems with emphasis on feedback to employees.
B) Expand suggestion systems with emphasis on feedback and recognition.

Motivation

Fair and consistent enforcement of rules and practices.

Health and Long-Term Exposures

A) Increased application of ergonomic principles.
B) Emphasis on reducing employee dust exposure.
C) Emphasis on reducing employee noise exposure.

C60709 0580

cc:
Operations Safety and Health Lead Team Members
Managers
Superintendents
Department Heads
Safety Staff

Attachment 2

EXTERNAL SAFETY AND HEALTH AUDIT, ROCKDALE MAY 1991

I. COMMITMENT

a. LOCATION SAFETY AND I.H. POLICY

EXCELLENT - Location management has developed their own written policy on safety and health. It meets corporate policy and expectations and is signed by location management and publicized. Each level of management has formally reviewed the location policy with their subordinates and emphasized their expectations and support. A basic understanding of the location's policy is displayed throughout the organization. All levels of plant personnel have either reviewed or have had this policy communicated.

b. TOP MANAGEMENT VISIBILITY AND INVOLVEMENT

EXCELLENT - Location management takes a hands-on approach. The safety and industrial hygiene staff are used as a resource. Line organization has established proprietorship and line management makes scheduled routine audits, inspections, observations, etc. Top members of line management participate in investigations. Line managers participates in all serious injury investigations. Location manager involved in lost workday cases. All levels of location management assist in conducting observations, inspections, audits, etc. to help subordinates understand expectations making frequent plant visits specifically focused on observing and commenting on safety and industrial hygiene efforts. All levels of management verified to be involved in investigation/observation and fully supportive of safety activity.

c. SAFETY AS A VALUE

GOOD - People believe that safety holds an equal priority to production and can give examples. Safety is discussed at all staff meetings. Adequate time, money and effort is applied to accident prevention and safety projects.

Recommendation: Develop a way to measure and track safety project improvements.

d. CLEARLY DEFINED RESPONSIBILITIES FOR SAFETY & I.H.

EXCELLENT - Written responsibilities exist for all levels of management. Accountability system is consistent and effective. It was hard to find a supervisory person who does not accept

safety and industrial hygiene as a line responsibility. Safety and I.H. personnel used as resources, counsel, consultants, etc. Management personnel exercise proactive involvement and enthusiastically demonstrate the priority of safety and industrial hygiene. A strong sense of ownership exists. The development of both written and on-line detailed responsibilities for safety was consistently verified in all areas. Plant personnel at all levels clearly see safety as a high priority.

Benchmark The on-line system in the power plants was seen as being particularly useful with zero opportunity to mislay information/responsibilities.

II. ORGANIZATION AND ADMINISTRATION

a. EXECUTIVE SAFETY & HEALTH COMMITTEE

FAIR - The Operations Safety Lead Team is organized well. It has an agenda in advance for its monthly meeting and minutes are prepared and distributed. The plant manager is the chairperson and his division managers are members. This team has been functioning about one year and has not yet become effective at setting policies and giving direction to overall safety and industrial hygiene effort.

Recommendation: Continue using the Lead Team for policy development and directing continuous improvement.

b. JOINT SAFETY & HEALTH COMMITTEE

GOOD - The Joint Safety and Health Committee has appropriate membership and meets regularly with an agenda. Minutes are prepared and distributed. Most items dealt with are plant-wide issues including industrial hygiene.

Recommendation: Enhance the Joint Committee's effectiveness by better linkage with the Plant Safety Lead team.

c. DEPARTMENT & OTHER SAFETY SUBCOMMITTEES & TASK FORCES, ETC.

GOOD - All departments have a safety committee with line management as the chairperson or co-chairperson. Most departments use task teams routinely. They meet regularly and have meeting minutes, most of which are posted in the department. The task team or work groups have specific assignments and target dates for completion. Most of the committees and task teams have a good mix of line management and hourly personnel.

d. ADEQUATELY TRAINED & SUPPORTED SAFETY & I.H. STAFF

EXCELLENT - A safety and/or industrial hygiene contact exists with the skills and experience to match the location's needs. The personnel are knowledgeable and they are provided adequate time, equipment and resources to implement an effective safety program for the size and type of facility. Meets the criteria of at least 1 person equivalent in safety and industrial hygiene per 500 employees. The safety person reports to someone who is able and effective at facilitating the program's implementation.

The safety person reports to the Work's Manager and has frequent and routine contact with the Work's Manager on appropriate safety issues. The safety and industrial hygiene staff includes at least 1 professional with a background in engineering, safety or industrial hygiene. In large locations, at least one professional on staff is a P.E., CSP, CIH or has an advanced degree in safety or industrial hygiene.

Location meets the above criteria for an excellent rating in this area. However the size of this facility, and the constantly growing concerns and associated regulatory mandates in the field of Industrial Hygiene, strongly suggest that a full-time Professional Industrial Hygienist would enhance an already excellent staff.

III. COMMUNICATIONS

a. ATMOSPHERE FOR EMPLOYEE INVOLVEMENT

FAIR - All elements of good bar one exception exist. Some elements of excellent were verified and there are examples in all areas of other types of involvement.

Joint Safety and Health Committee for the location exists and membership is rotated on a regular basis. Many departments have similar committees or teams. Subcommittees or task forces are more common and exist for various purposes. Employees actively assist with safety training, preparation of JSAs, workplace inspections, accident investigations etc. Many employees would personally correct unsafe actions and take initiative to resolve unsafe conditions.

Most departments have committees and there are several subcommittees or task forces that are active and visible on special safety and industrial hygiene efforts. Locally developed department or location training programs or safety devices, new ideas, etc. may be common.

Recommendation: Pursue the implementation and acceptance of the safety suggestion scheme. Review the work being done by the

Power Plant group to ensure adequate communication exists on this scheme for the whole plant.

b. USE OF BULLETIN BOARDS, SAFETYGRAMS, ETC.

FAIR - Occasional use of bulletin boards. Boards not all sectionalized with one area provided for safety. Some boards are revised regularly and are well maintained. Safetygrams and similar literature are good quality and used on a regular basis. Special displays, billboards, or the like are used at gates, etc. Displays and messages are used regularly (in some areas) to depict performance or emphasize special themes and programs. Regular use of safetygrams or other literature is keyed to specific accident prevention problems. Distribution is on a routinely planned and organized basis.

The plant makes extensive use of safety communication with some duel use boards. The level of use and maintenance of these boards across the plant has varied, with some obviously lacking attention. The use and content of safetygrams had elements of excellence in some areas. The overall contents of the safetygrams was consistently high.

Recommendations:

o Review standard to develop consistent style of dedicated safety board.

o Ensure data is up to date and removed when no longer relevant.

c. DISTRIBUTION OF OFF-THE-JOB SAFETY LITERATURE

EXCELLENT - Regular use of off-the-job safety literature is keyed to specific accident problems as indicated by the plant's own off-the-job injury statistics. In-plant publications are utilized to carry special articles keyed to special off-the-job promotional projects. The plant has an excellent program with strong hourly input into the selection of material. The scheme is exceptionally well received and many interviewees quoted anecdotes of an off-the-job activity which has been modified due to the program.

d. USE OF IN-HOUSE PLANT NEWSLETTER TO PROMOTE SAFETY

EXCELLENT - Newsletter is used regularly to convey safety performance, messages and other safety information. Newsletter photos are selected to reenforce safe conditions or actions. Newsletter is also employed for special and specific programming that is integrated into campaigns directed at injury problems of the plant. Newsletter is viewed by employees as an excellent

resource for information about safety. The newsletter is well-done and heavily oriented towards on-site and off-the-job safety topics that fit the location's operations and geographic culture.

e. FEEDBACK LOOP ESTABLISHED FOR I. H. SAMPLING RESULTS

GOOD - Sampling results are communicated to the superintendents, medical and Safety Manager in written form. Verbal group or one-on-one messages are communicated to employees by superintendents, supervisors and/or safety/IH representative. Communication is passed on to supervisors of other shifts by routing. In many cases it is discussed with other crews or the general department via group or toolbox safety meetings. Union co-chairperson is provided with sampling results upon request. Employees believe they are kept informed in a language they can understand.

Recommendation: Develop and communicate a mechanism to ensure that employees of unsampled but effected shifts/crews are informed of sampling results.

f. SAFETY SUGGESTION/INQUIRY SYSTEM

GOOD - Employees have been educated to respond to concerns or suggestions for improvement by entering their comments into some formalized safety suggestion form, notebook, log or the like. Someone is assigned the responsibility to monitor the suggestion/ inquiry system and initiate a decision and/or action. A higher authority for appeal of rejected suggestions may exist. Generally, feedback is given on the suggestions status, however, it is generally not documented. Employees feel the system is used but sometimes are more comfortable going around the system rather than using it.

Encouragement to use suggestion/inquiry system seems to be in place in some areas but is not universal. Benchmarking the Mine Unit would be helpful elsewhere for development. Initiation of responsibilities to monitor, communicate, and follow-up will be required to achieve excellence.

IV. ACCIDENT/INJURY FREE EVENT INVESTIGATION & REPORTING

a. OSHA/MSHA REPORTING PRACTICES

EXCELLENT - Reports comply with OSHA/MSHA reporting deadlines and there is orderly backup documentation of entries. There are differences between medical worker's compensation cases and OSHA/MSHA records, however, backup documentation of differences as justification generally exists. Outreach is accomplished via proactive participation in government or other seminars and workshops, including MSHA inspectors using Sandow Mine as a reference for others as results of AAA inspections.

Recommendation: Assure thorough back-up justification is promptly documented for recordable cases not considered Lost Work Day, but for which we provide Worker's Compensation payments.

b. REPORTING PRACTICES FOR FIRST AID AND INJURY-FREE EVENTS

GOOD - There is an effective effort in the sense that a clear policy exists and is enforced to require the reporting of first-aid cases and injury-free events and to investigate and document the circumstances leading to these injuries and/or events. An on-going record of these events exists and is included in injury statistical analysis, etc. where appropriate.

The general perception of the location's workforce would be one of confidence that most first-aid cases and many IFEs are actually being reported and investigated (and this is confirmed by several examples). The location is proactive at promoting the value of the non-serious injury or IFE as a way to take corrective action. IFE investigations or first-aid investigations with high potential receive equal visibility and the same level of management involvement and follow-up as do serious or lost workday injuries.

The infamous "Red Tape" syndrome which is also a common complaint around completion of III's in most locations is also apparent at this facility. This was confirmed through interviews with workers. Reducing this fear of reporting will move this audit category towards EXCELLENT.

Recommendation: Continue efforts through communication, that the true purpose of III's is to identify problem areas and develop correction procedures and follow-up.

c. QUALITY OF INVESTIGATIONS AND ANALYSIS

GOOD - All accidents/IFEs are thoroughly investigated by the accident investigation committee for serious accidents/IFEs and the supervisor for minor related cases. The investigations are conducted on a timely basis and, if possible, always include the injured employee. Triple I is filled out completely with recommendations and completion dates. Injury-free events are reported, investigated, documented and communicated to prevent reoccurrence. Investigations are covered in location manager's staff meeting and departmental safety meetings. Use of safetygrams or other methods to inform employees of incidents and near misses. Managers and supervisors participate in accident investigations.

All the above elements of good exist as well as several in the excellent category. The level at which managers participate varies as to area and the degree of the injury or seriousness of IFE. This could be expanded for a show of "Top End" commitment through exposure. Expand use of outside resources on more than only incidences that are near-catastrophic in nature. Video equipment, photo's, and analytical and systems safety methods are being used but effectiveness could be improved.

d. FOLLOW-UP ON IDENTIFIED CORRECTIVE ACTIONS

EXCELLENT - There has been a proactive program to utilize a feedback/ follow-up system on corrective actions identified during an accident or IFE investigation. Target dates for completion are established and responsibility for completion is

assigned. Personnel are held accountable for completion of their assigned responsibilities and responsibilities match the person's ability/authority to affect a change. Evidence from the review of several recent investigations reveals that implementation of most corrective actions is adequate and timely. Some delays may exist for good reasons like design, researching solutions, etc.

Burden of the follow-up system for corrective actions identified during serious injury and IFE investigations falls on the respective line management chain of command. The safety staff and the safety committee's role is to audit the performance of the follow-up system and provide feedback to the line manager. The follow-up system clearly defines responsibilities on the accident investigation and reporting flow chart.

e. STATISTICAL ANALYSIS OF ACCIDENT/INJURY/EXPOSURE DATA

EXCELLENT - CADA data is used effectively. In addition to the standard reports on location department and occupational performance, special retrievals for specific data are used. Graphic presentations along with calculations of control limits and the use of SPC charting techniques are used to identify key problem areas, communicate the data and monitor the effectiveness of corrective measures. Program of SPC analysis is used to monitor industrial hygiene sampling results or illnesses such as heat stress for control. Recent use of trend analysis on fluoride exposures in the pot rooms identified an increase in the levels of particulate fluorides. Communication of this information and determination of the cause(s) were underway during the audit.

V. HAZARD AND ENGINEERING CONTROLS

a. COMPLIANCE WITH FEDERAL, STATE AND LOCAL STANDARDS

FAIR - Location has made some attempts to understand and comply with OSHA/MSHA or other regulations. Inadequate understanding or knowledge and ineffective controls exist in some areas. Moderate compliance problems exist when compared to similar locations based on size and enforcement agency.

Recordkeeping is generally good. Isolation of pinch points and crushing injury potential in electrode - pallet conveyor, stocker crane area, rodding room - is severely deficient. (Reference previous fatalities within Alcoa). The corporate written laboratory hygiene chemical plan has been distributed and training completed. Specific duties and resource allocations for the Chemical Hygiene Officer have not been identified.

Recommendations:

o Thorough and immediate review of pinch-point and crushing potential is recommended in electrode.

o Modify the written Chemical Hygiene Plan to Rockdale's needs and expedite implementation.

b. **PLANNED INSPECTION PROGRAMS**

POOR - Area inspections are conducted with corrective actions generally timely. All levels of management are involved in inspections or follow up.

Pre-use vehicle inspections are not required in some areas. There is no system to check on pre-use crane inspections. The mine is an on site benchmark for pre-use inspections with a follow up system.

Recommendation: Implement pre-use inspections plantwide including documentation of corrective actions. Use data for repeat problems and trend analysis.

c. **HOUSEKEEPING AND STORAGE PRACTICES, ETC.**

FAIR - Raw materials, tools, equipment, items being processed and finished materials are being stored properly. Isolated problem areas exist. A program is in place to maintain housekeeping and improve storage. Attempts are made to provide controls for such hazards as improper compressed gas cylinder storage, improper rack storage, slippery/defective floor or aisleway surfaces, oily rags, broken glass, materials storage in front of electrical disconnects and safety/emergency equipment, etc..

There are pockets in the good and excellent categories such as the electrical shop, paint shop, general maintenance shop, and carpenter shop. By nature of the business, striving for excellence will be an uphill climb in areas like the potrooms.

Recommendations:

o Assess storage/handling policy on hazardous wastes so they do not accumulate and are not stored for long periods. (Example - Lab Storeroom)

o Arrange storage so mandoors are not blocked.

d. **TAGOUT/LOCKOUT PROCEDURES**

FAIR - All elements of fair exist with clear information provided to all employees on the use of the system. Elements of good and

excellent exist in all areas with the use of individual lock/tag evident throughout the plant. The standard of application across the plant varies significantly as regards detail on tags and the level of conformance to the rules.

The procedure is written and copies of the procedure are available via widespread posting, and personal copy safety rules for each employee. Production and staff employees (i.e. Engineering, etc.) as well as Maintenance employees have been adequately trained on the procedures, records of training are documented, and examples can be verified. Interviews with personnel confirm their knowledge of the procedures. The procedure covers all energy sources such as mechanical, electrical, hydraulic, pneumatic, and stored potential. The use of a lockout in conjunction with tagout is mandatory, however, this may be one lock and not necessarily individual locks. Written procedures clearly exist for defining the accepted method for removal of personal danger tags and/or locks when an employee fails to remove their tag/lock at the end of a shift.

Individual locks are required with individual keys and a closely controlled master. Complex production systems or processes, vessels and confined spaces, etc. have preplanned documented tagout/lockout procedures.

Recommendations:

o Review different procedures between plant/smelter regarding use of yellow tag. (Concern over Engineering/Contract personnel working under two different systems)

o Develop "model" standard for employee white tag with clear printed writing and enforce compliance (suggest write name clearly not sign).

o Review tag attachment method (i.e. use of string) with regard to OSHA 1910.147.

o Carry out more frequent in house audits to enforce standard.

e. ASBESTOS REMOVAL PROCEDURES

POOR - The facility has a written asbestos handling procedure but no management policy. The program restricts handling of asbestos containing material (ACM) to sampling of unidentified materials. However, Alcoan's were observed in contact with material marked as asbestos on a valve on #1 turbine in the Power Plant. In addition, numerous instances of loose friable ACM on the cat walks were observed. A comprehensive program to identify and label asbestos had been completed. However a detailed review of

the condition of remaining asbestos has not been conducted recently.

Documented overexposures (10X action level) for abatement contractors reportedly wearing supplied air respirators were found. This information is reportedly supplied to the contractor employer but no documentation is supplied to Alcoa to verify that exposure monitoring results are provided to the contractor's employees. In addition, Alcoa's Industrial Hygiene and Safety department does not receive the sampling results. Alcoa is provided no written documentation to explain excursions (in one case 100X action level) or follow-up action taken by the contractor.

Recommendations:

o Prepare a written asbestos management policy. All aspects of prudent hygiene practices should be included.

o Re-assess the accountability of asbestos program management at Rockdale Works. Present accountability lies with Environmental.

o Clean-up/encapsulate loose and friable asbestos at the Power Plant. This should be a TOP PRIORITY project.

f. FALL PREVENTION PROGRAM

POOR - Although many elements of the "fair", "good", and "excellent" exist, at least one key element is missing, namely a plant-wide documented survey to evaluate potential fall hazards. The primary focus has been fall protection, not prevention. Some examples of non-compliance to tie-off requirements were observed.

Recommendations:

o Focus more attention on fall prevention rather than fall protection.

o Conduct and document a plant-wide survey to evaluate potential fall hazards. Include plans for remediation and assign follow-up responsibility.

o Enforce tie-off requirements.

g. MOBILE EQUIPMENT SAFETY PRACTICES/PROGRAMS

FAIR - Written training program exists on operation of industrial vehicles/cranes but is not fully implemented. Elements of good and excellent exist. Rockdale has a formal written program

including proficiency testing that is communicated and understood by all employees. Equipment is in good repair and a preventive maintenance program is in place. Periodic medical exams are required. Employees, when interviewed, knew rules relative to truck/crane operations and observations showed that employees operate vehicles/cranes within these guidelines. There are required travel lanes for vehicles and pedestrians to maintain pedestrian safety.

Recommendation: Implement pre-shift inspections as planned according to new Alcoa Engineering Standard on Mobile Equipment.

Additional comments and notes: Consider installation of seat belts on all mobile equipment. Review use of two wheel vehicles in plant. Observance of stop and yield signs by mobile equipment and scooter operators is a very positive point.

h. **PROJECT SAFETY AND HEALTH REVIEW PROCEDURES**

EXCELLENT - Engineering Project Safety Review Guidelines are a thorough tool for identification of scope of when to conduct PSR and attendees. Safety/Industrial Hygiene Manager sign-off is required on all R/A and most shop orders. Engineering Department Request for Capital Closeout is effective system to assure issues identified in PSR are promptly addressed.

Recommendation: Consider Safety/Industrial Hygiene Department sign-off for all shop orders to assure such things as one-for-one replacements do not perpetuate safety/industrial hygiene concerns.

i. COMPLIANCE WITH ALCOA ENGINEERING STANDARDS

This optional element was not audited by choice.

j. CONFINED SPACE ENTRY PROCEDURES

GOOD - All elements of good are in place however in some areas JSA's are still being produced for this activity.

Recommendations:

o Expedite the completion of JSA's in all areas (NB it has verified that three Maintenance Unit Supervisors in the smelter area are currently assigned to this).

o Review the potential for rescue from such a space where hazardous implications are relevant.

o Review the pending OSHA changes to ensure JSA's will conform to new standard.

k. WELDING, BURNING AND HOT WORK PERMITS

POOR - There are some formal program elements that address where welding, burning or other hot work may be performed. Generally, welding, burning, etc. are prohibited where an open flame would be dangerous, i.e., around combustible materials and solvent storage. Written safety rules or procedures exist on the subject and are generally followed. Prior to starting work, formal approval is required in the form of a burning, welding, or hot work permit which requires a supervisory or other specifically designated, trained person to determine that the proper precautions are being followed and that it is safe to proceed.

The handling, storage and use of welding cylinders and associated equipment does not meet OSHA 1910.252 for Welding, Brazing and Cutting.

Recommendation: Implement method for ensuring compliance with OSHA 1910.252 with regard to the handling, storage and use of welding cylinders.

l. PERSONAL PROTECTIVE EQUIPMENT

FAIR - Proper storage and cleaning facilities do not exist for personal protective equipment in some cases. Personal protective equipment needs have been evaluated including employee input in most areas. Rules are in place, understood and wearing is consistently good. Fitting procedures and recordkeeping are in place and well maintained. Use of hearing protection was excellent.

Recommendation: Review and upgrade storage and care of reusable respirators.

m. EMERGENCY PROCEDURES, EQUIPMENT AND RESPONSE

FAIR - While there exists a Hazardous Materials team as an emergency response team, there is not a Hazardous Materials Response Plan nor designated Hazardous Material units.

There is some concern over the adequacy of the fire fighting equipment for the size and fire potential of the facility.

A mutual aid agreement is in place with local fire department.

Recommendations:

o Conduct unannounced emergency response drills on a regular basis.

o Consider installing an explosion monitoring and a fire suppression system on the propane tank farm.

o Reassess fire truck adequacy. A 750 gpm for the hazards of Rockdale appears inadequate. Verify through Factory Mutual, American Risk Management and Corporate Insurance and Risk Management Division.

o Expand the Emergency Rescue Team to become an Emergency Response Team. Include a response unit/vehicle and a written plan/program.

n. PRODUCT SAFETY

This optional element was not audited by choice.

o. TOXIC SUBSTANCE CONTROL ACT (TSCA)

This optional element was not audited by choice.

VI. INDUSTRIAL HYGIENE PROGRAMS AND MEDICAL SURVEILLANCE

a. MEDICAL PROTOCOLS FOR CRITICAL JOBS

GOOD - Medical examinations and follow-up are not driven by the corporate medical protocols.

All employees receive comprehensive medical examinations every three years for those under age 48 and every two years for those above 48. The frequency of exams is increased as appropriate for employees with specific conditions as determined by the Medical Director. Annual audiograms are conducted for employees in the hearing conservation programs. Based on exposure summaries sent to Medical from Industrial Hygiene, all corporate protocols were being met. The level of detail from the computer generated exposure summaries may be suspect. Certain sub-job classes not identified by computer may have higher exposures than the rest of the larger job class, but statistical summaries of sub-job class exposures were not available. Hence the data is likely to be skewed and there may be isolated individuals not receiving certain protocols at the appropriate frequency. This could not be verified or refuted.

Feedback and requests for further IH evaluation are provided by Medical based on examination results. Again, this is not driven by exposure-based protocols.

b. ACCESS TO ADEQUATE INDUSTRIAL HYGIENE EQUIPMENT, ETC.

EXCELLENT - A full inventory of sampling equipment is maintained by the plant. This includes the required number of sampling pumps and noise dosimeters to conduct full surveys along with specialized equipment such as a heat stress monitor, Gillian calibrator, toxic gas monitors. In addition, three types of microscopes are available for identification and counting of asbestos fibers. Only under extreme conditions would it be necessary to request outside equipment. There is a written calibration program that includes procedures and documentation. Calibrations are occasionally reviewed within the IH lab and are attached to reports which serves as an informal check on accuracy of data transfer. The lab quality control process has included verification of size separation by the respirable dust cyclone.

Overall, this program is world class.

c. ESTABLISHED HAZARD COMMUNICATIONS PROGRAM

GOOD - Department materials inventories are developed and there is a systematic method to maintain and update this information in a timely, organized manner. Material safety data sheets exist for all of the chemicals checked during the audit. Purchasing and Industrial Hygiene communicate and spot check presence of

MSDS. Purchase requisition notes requesting MSDSs are used. The follow-up with suppliers is effective and does exist (evidenced by a few examples). Safety and I.H. rely on line input for updates to materials inventory. Safety and Industrial Hygiene spot check MSDS on new materials entering the location. Employees are well trained in the CORE modules on hazard communications and there are areas where additional training needs for special materials like asbestos, refractory ceramic fibers, etc. have been addressed. Employees have access to MSDSs and most were able to demonstrate a real knowledge of how to obtain the information, and from whom. No deficiencies in labeling of containers - both small and large - were found. Contractors' personnel are required to submit a list of chemicals brought on to the site and are told they must maintain MSDSs for their materials. This requirement is not audited by the project engineer and Safety & Industrial Hygiene group. Contractors working in departments or at the location receive orientation to the chemical exposures they might encounter as a result of Alcoa processes or how to get more information should they have questions.

RCF training of contractors and its documentation is one example of an excellent implementation of hazard communication.

Recommendation: Consider an audit process for chemicals brought on site by contractors involving the contract engineer and Safety and Industrial Hygiene.

d. EXPOSURE ASSESSMENTS

GOOD - Basic industrial hygiene surveys have been completed to evaluate the major exposures to air contaminants and noise. Industrial hygiene surveys are conducted by a qualified individual. Air samples are analyzed by an AIHA accredited lab. Copies of sampling results are sent to Pittsburgh for review by a certified industrial hygienist. Periodic plant-wide sound level meter surveys are conducted. Maps showing general sound levels were produced and circulated. Alcoa guidelines have been used to prepare a "needs assessment" and written sampling schedule. The PC Industrial Hygiene Sampling Module is used to prepare baseline summaries and focus periodic surveillance. However, detailed sampling summaries of sub-job class exposures are not represented. Management is routinely provided with written interpretations of sampling results. Summaries of exposure data and interpretive comments generally are communicated to all affected employees, but some instances where unsampled shifts were not informed were discovered.

e. EFFECTIVE RESPIRATORY PROTECTION/PULMONARY SURVEILLANCE PROGRAM

GOOD - A comprehensive written program is followed throughout the plant. However, this has not been updated since 1988. The Mine area does have a current written program. Proper use of respirators is observed in at least 90% of wearers. Training, fit testing and medical certification documentation for all wearers is readily available. New hires and transfers are medically certified, trained and fit tested prior to reporting to jobs where respirators are required. Appropriate medical evaluations are included as part of all scheduled medical exams. The Medical Director approves or denies certification based on the most recent physical; this is communicated in writing to departments. Train-the-trainer sessions have been held so that fit testing and training is conducted at the department level and is included as part of new hire or transfer training. The beard policy is followed and enforced. Periodic inspections are not formally conducted throughout the plant.

Air sources for supplied air have appropriate filters and CO monitors. The monitors are calibrated monthly. Portable filtration systems have color indicators to show when they need to be replaced. Self-contained breathing apparatus are inspected monthly and are tagged. Reusable respirators may be cleaned after each day's use, but not all are stored properly. Not all reusable respirator wearers had materials for cleaning their respirators.

Recommendations:

o Ensure that all reusable respirator wearers are provided with cleaning/sanitizing materials and proper storage containers.

o Include inspections of respirator use and storage as part of routine audits, inspections and observation programs.

o Update the written respirator programs and ensure that all aspects are followed throughout all areas of the plant.

Note - this section was apparently left out of the final report mailed to Rockdale. This was the original writeup which was

documented. General area noise surveys are updated annually. Plant maps showing average sound levels were observed in a number of areas. Signs are posted at the perimeter of areas requiring hearing protection and rules are consistently enforced. Pre-employment and annual audiometric testing is conducted in accordance with Alcoa guidelines. Technician certification and instrument calibrations were current and readily available. Daily documentation of "biological" calibration by an Oscar machine was documented.

Follow-up counseling and investigations are made of each individual experiencing a confirmed threshold shift. All management and supervisory personnel interviewed were aware of the specific individuals in their areas who have incurred a permanent threshold shift. In some cases the notification of shifts is by phone call to inform supervisors of re-test scheduling. Performance in hearing conservation - as measured by the annual percent of individuals who have incurred a confirmed threshold shift and percent of employees with hearing impairments - is reviewed with the *****Executive Safety Committee*****.

Recommendations:

o Review system for coordination/responsibilities of RSO's. Because of absence of Mine RSO it was difficult to ascertain information. Consider cross training of all plant RSO's.

o Review methodology for emergency drills as per audit protocols.

o Review with an expert the JSA for the Mine geophysical logger and produce a detailed work instruction that will minimize exposure to the technician handling the source.

o Review Nuclear Regulatory Commission requirements relative to signs in the Power Plant and on Mine vehicles.

o Lock the Cs 137 source in a container.

h. HEALTH HAZARD CONTROL

GOOD - Some engineering controls have been established. The hazardous exposures to air contaminants and noise are clearly recognized. Some hazardous materials have been substituted in an effort to control a health hazard (e.g., 1,1,1 trichloroethane will be replaced by an electrostatic stub coater; RCF replacement). New facilities, equipment and materials are reviewed in an effort to identify and control health hazards. The Safety and Industrial Hygiene Manager or representative participates in Project Safety and Health Reviews. Shop orders are reviewed by the Safety and IH Manager. Many, although not all, engineering and maintenance work orders are also reviewed. The engineer ordering new equipment/vehicles is responsible for assuring Noise Control Worksheets are completed and vehicles are purchased in accordance with Alcoa Engineering Standard 30.3.2. Testing documentation is generally done by the vendor. Recently, the IH department has been involved in confirming that new vehicles comply with our Noise Standard. The Truck Shop does not routinely check noise levels of vehicles in for repair.

Written work practice controls have been established for health hazards (e.g. chlorine handling, oxygen lancing, RCF, precautions for working in hot environments and preventing contact with materials that can be absorbed through the skin, etc.).

There is a great deal of activity around engineering controls related to health hazards. Some have clearly been based on health hazards, such as ventilation in the spent potlining building. The impact and success of these projects are not linked as closely as they should be with IH exposure data, respirator use and number of employees impacted.

VII. WORK PRACTICE CONTROLS

a. EFFECTIVE SAFETY RULES

GOOD - Published plant and departmental safety rules exist with personal copies in hand or readily available. Employees are aware of the rules and a high degree of compliance exists. Broad

b. CONTRACTED SERVICES SAFETY

GOOD - Rockdale has been proactive. Contracted services supervision receives an overview of safety expectations during the bid process. Expectations on safety and health are included in the written scope of work and are discussed at pre-job site meetings. The location safety department may or may not be involved in pre-job site visits depending on the magnitude of the work. The engineering and purchasing groups take the primary lead in this effort using the safety department as a resource. Periodic audits or observations by line management personnel supervising or coordinating their work does occur formally as part of routine job observation programs. There is an accountability within the location concerning contractor safety, however, it mainly focuses on the contractor's supervisor, the engineering department,

d. EQUIPMENT SAFETY ANALYSIS

POOR - Limited knowledge of ESA's and their use. Equipment safety analysis incomplete, not done or out-of-date. Limited use in actual pre-job instructions. ESA's are not available in job situations to hourly employees or supervisors.

Recommendations:

- o Provide ESA's in a format accessible to hourly employees.
- o Train employees in development and use of ESA's.
- o Develop ESA's for all non-routine jobs.

e. PLANNED JOB OBSERVATIONS

FAIR - There is a formal observation program in place that requires a specified number of observations per week, month or year, etc. by supervisors and line managers. Task observations and critical elements during the observation are not selected and identified in a formal manner (i.e. no analysis of high potential or high accident frequency tasks to prioritize observations).

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f. SPECIAL SAFETY STANDARDS AND OPERATING PROCEDURES

Good - Generally there are procedures at Rockdale for such things as asbestos removal, clearance, lockout/tagout, confined space, etc. This protocol could reach "excellent", with **regular** review and update and with hourly involvement in development/revisions of such procedures. Exceptional use of SOP's on network at power plant.

VIII. TRAINING

a. TRAINING PLAN

GOOD - The location and the individual departments have reviewed their accident history and determined areas needing additional training. A training plan has been developed and, in addition to new programs, covers the necessary or ongoing refresher programs like CORE, forklift, hearing conservation, asbestos, fire brigade, etc. Outside training resources are used when necessary or appropriate, including schools, vendors, consultants,etc. Training plans are part of operating plans, not a separate function. Most departments publish a training plan as part of its safety action plan for the year.

b. REGULARLY SCHEDULED TOOLBOX/DEPARTMENT SAFETY MEETINGS

FAIR - Planned safety meetings are conducted. The frequency of these meetings varies considerably across the plant from weekly to monthly. Most locations have a written list of topics for the year's meetings. Meetings consist of a combination of discussion and audio visual information. Attendance is required but is not documented in all areas. Some areas display elements of good and excellent with the use of toolbox and control room type meetings (EG Power Plant). Some areas occasionally do testing for comprehension. Some locations utilize both toolbox and safety meetings. Toolbox meetings are held at least weekly and, in some areas, may be led by craft or other hourly representatives. Meetings are of high quality and perceived as effective by the employees.

Recommendations:

o Enforce routing following department list of essential topics. Enforce listing of attendees.

o Consider using a check list for each department showing meetings held by each crew over time.

o Review methods to verify comprehension.

o Review methodology for make up classes on mandatory subjects.

c. SPECIAL TRAINING EFFORTS

FAIR - Most protocols of "good" exist as well as some of the "excellent" rating (but not all) - most notably behaviors as they relate to accidents through the ACT program. While there is a HAZMAT (Emergency Response Team), there is not a documented (written) Hazardous Material Response Plan nor a designated HAZMAT unit.

Recommendation: Develop a Hazardous Materials Response Plan and a HAZMAT unit.

d. SUPERVISORY TRAINING

EXCELLENT - Supervisors receive formal training in the basics of their functions as well as safety and industrial hygiene training. Hazardous material control, vehicle/crane training, employee observation, MSDS, etc. are also covered. In addition, supervisors receive training in "effective presentation skills" as well as group leadership. Supervisors are given adequate time and support to participate in growth training, both technical and personal.

e. CORE TRAINING

GOOD - All supervisory personnel have been trained in CORE. Provisions are in place for new supervisory personnel to be trained as well as for refresher training for previously trained individuals. Documentation is maintained and is accessible for all to see who has been trained and when.

Elements of excellence exist (i.e. local CORE supplements to Job Safety Observations through Advanced CORE Techniques (ACT) process and feedback for improvement to corporate staff regarding accident investigation). Appeared to be deficient in Tracking and verifying CORE records for hourly employees transferred.

Recommendation: Continue of on-line program to correct deficiencies.

f. NEW OR TRANSFERRED EMPLOYEE ORIENTATION

FAIR - New hires receive excellent orientation. Well documented, formal programs are in use at the Mine, Power Plant, and Smelter. Smelting orientation is handled by trained instructors and includes signed records and test results in the employee's file. Interdepartmental transfers in the smelter receive only informal orientation other than safety rules. Some deficiencies in training of transferred employees were found.

Recommendation: Implement a formal transferred employee orientation program in each department.

IX. MOTIVATION

a. FORMAL INDEXES FOR MONITORING AND MEASURING PERFORMANCE

FAIR - Safety indices are well understood and widely published. Safety action plans (performance objectives) are an example of directed efforts to continuous improvement in managing safety/industrial hygiene and measuring management efforts to drive accountability.
Recommendation: To reach "Good" or "Excellent" levels, develop a formal internal audit program.

b. FAIR, CONSISTENT ENFORCEMENT OF SAFETY RULES AND WORK PRACTICES

GOOD - There is an extensive joint effort to enforce safety rules and practices. Supervisors are not reluctant to issue corrections. Discipline is clearly a line responsibility. Some departments have repeat offender programs. A strong brothers-keeper philosophy exists. Where necessary, rule violations are handled immediately and effectively. A strong program based on positive reinforcement of safe behavior and rule compliance exists.

c. SAFETY AWARDS/INCENTIVES/SPECIAL PROGRAMS

GOOD - Awards and incentives are utilized at the departmental level and periodically at the location level. There is positive communication of the award. Regular special safety activities and promotions exist. The Safety Recognition Program published June 1984, revised April 1986 is noteworthy in that it recognizes both departmental and plant-wide accomplishments. It is well received by plant personnel.

Recommendation: Review of the written program, particularly regarding dollar recognition amounts, may be appropriate. (5 years since issuance).

d. OFF-THE-JOB SAFETY PROGRAMS

EXCELLENT - A method exists to report off-the-job lost workday injuries including reporting to Corporate. Annual analysis of off-the-job data is used to target areas for awareness. Frequent (at least monthly) use of plant communication tools like bulletin boards, newsletters, toolbox or safety meetings to create an on-going awareness of off-the-job safety. Some of the material used is obtained from the Corporate mailings or the Safety Newsletter. Proactive efforts generated within the location are often shared with other locations. Off-the-job films/videos are used in safety meetings in a planned manner during appropriate times of the year. An off-the-job steering committee is established and regularly plans off the job emphasis through the joint safety and

health committee. Committee is involved and consistently produces quality programs. Location personnel are positively aware of the location's emphasis on off-the-job safety. Routinely offers special programs like Defensive Driving, CPR, First-aid, Hunter Safety, etc. to employees and their families.

Data is well used to direct activities of off-the-job program. Plant employees are aware of and supportive of program.

ADDITIONAL RECOMMENDATIONS:

1. The plant has a system for testing and inspection of slings and lifting devices. Experience in Western Australia has shown significant potential for injury if these devices fail. Although routine testing occurs it is recommended that some form of easily visible color coding is used on these devices so that the individual using the device can easily ascertain that it has been checked.

2. The operation of siphoning aluminum from the pots to the cradles was seen as potentially hazardous. The concern is that to reach the valve to operate the siphon, the operator has to reach over an open pot containing molten aluminum. In this position the operator is not prevented from metal splash as the face shield is ineffective in this position. It is understood that several accidents have occurred in recent years which confirm this risk.

3. Both Western Australia and Pt. Comfort have experienced fatalities due to fork lift trucks overturning and trapping the driver under the superstructure. We strongly recommend that seat belts are fitted to all these machines.

From External Location Safety & Industrial Hygiene Audit Team

To W. J. DRAKE

ROCKDALE WORKS

1991 August 5

RE: FINAL AUDIT REPORT - MAY 1991 AUDIT, ROCKDALE WORKS

I. Background:

A. Purpose-The purpose of the external location safety and industrial hygiene audit is to assist your location management by identifying safety and industrial hygiene strengths and weaknesses, making recommendations and utilizing on-going evaluation with follow-up for the continued development of a self-sustaining and effective location safety and industrial hygiene program.

This audit report should serve as a benchmark of performance based on quantitative, consistent evaluation of the total quality of your location's safety and industrial hygiene efforts. **No other copies of this report will be circulated.** A back-up copy will remain on a computer file for future reference, however, this will be available only to the Corporate Audit Team Secretary.

Each location is responsible for the following follow-up as part of the audit procedure. **Within 30 days following receipt of the Final Audit Report, the location must** summarize in memorandum form to their respective Business Unit Management some general comments about the audit; strengths and weaknesses; and action plans for addressing those areas the location has targeted for further improvement based on the audit team's feedback. A copy of the memorandum should also be sent to the audit team leader.

B. Scope - On May 6 - 10, 1991 an audit was conducted at your location. The audit process focused on the nine (9) critical elements identified in Alcoa's CORE Chapter 15 Addendum on External Safety and Industrial Hygiene Audits. Using the information provided by your location's response to our Pre-audit Survey (See Attachment 1.), fifty-five (55) of the fifty-eight (58) audit criteria were evaluated. The three which were not audited were optional.

C. Conduct of Audit - The audit was initiated based on a schedule established by your Group Vice President, J. L. Deiderich and the Corporate Executive Safety Committee. The auditors were selected by R. W. Barr, who served as the audit team leader and audit team secretary.

The audit process began with an opening conference involving the following personnel from Rockdale: Management staff supported by department superintendents; Joint Safety And Health Teams from the Smelter, Power Plant and Mine; Executive Union

representation; and members of the Safety and Industrial Hygiene Departments.

Members of the audit team included:

R. W. (Bob) Barr	Pittsburgh
D. T. (Dan) Hentges	Addy
J. V. (Julie) Hoffman	ATC
J. S. (Steve) Whitehead	Warrick Operations
R. (Russell) Williams	KWINANA
P. T. (Paul) Woerz	Warrick Operations

During the opening meeting, audit practices and procedures, as well as the general organization and implementation of your safety and industrial hygiene program were discussed. Following the meeting, the auditors began their field work to obtain an understanding of your operations and practices as they relate to safety and industrial hygiene. Part of this field work focused on the review of internal management controls as they relate to safety and industrial hygiene activities and whether their application exists and is effective.

Data to support the auditors findings may be physical, testimonial, documentary and/or analytical in nature. Generally, auditors evaluated the data to the detail necessary to reach a practical conclusion based on the criteria published in the CORE Chapter 15 Addendum. Efforts were made to include as many of the operation's departments as possible for each audit subelement, however, for a number of subelements the evaluations and observations were restricted to only a few departments. To our knowledge, all departments except Sanitation and Potroom Control were included in the evaluation of at least one subelement. We estimated that more than 350 individual contacts with Rockdale employees were made.

D. Audit Findings - One of the key overall findings of the audit was the impact of the effort being put forth in all areas covered by the audit. Because of the unique nature of Rockdale having two major areas only recently coming under Rockdale management, levels of implementation varied. What struck all of the audit team members most was the sense that conscientious, safe behavior was an integral part of individuals' actions, both on and off the job.

There were thirteen (13) audit subelements which were rated EXCELLENT. There was at least one excellent in each of the nine major areas. These are considered to be a benchmark programs. Unless you have objections, the Corporate Audit Team Secretary will inform other Alcoa locations who were weak in those areas that you have excellent programs. They will be encouraged to contact your facility. Five of the subelements did not meet all of the FAIR criteria and were rated POOR. They were Planned Safety Inspection Program, Asbestos Removal Procedures, Fall Protection Programs/Practices, Welding, Burning and Hot Work Procedures, and Equipment Safety Analysis. The first four of these are all in the area of Select Hazard and Engineering

Controls. Initial efforts should prioritize the specific elements missing from these four areas. The deficiencies in ESA's are not necessarily as great as a POOR would indicate, in that Many of your JSA's do include much of what might be found in a separate ESA.

The summaries found in Attachment 2 review the audit team's perceptions and findings in the areas audited. A verbal descriptor in the form of POOR-FAIR-GOOD-EXCELLENT is used for each subelement. This is followed by a summary of observations supporting the criteria for that respective descriptor as printed in the CORE Chapter 15 Addendum. Specific recommendations for improvement are listed as such under each subelement which received an auditor rating of POOR or FAIR. These are intended to improve specific observed deficiencies to GOOD or EXCELLENT. **Subelements which received GOOD or EXCELLENT ratings did not require specific recommendations for improvement**, however you will find that many did contain recommendations for you to consider. All areas also can be compared to the published criteria for EXCELLENT and targeted for future improvement on a schedule established by you. Generally, the audit team would encourage bringing all existing tools to a GOOD level of performance prior to placing too much emphasis on reaching the EXCELLENT level of performance in specific areas. However, newly implemented tools should be developed and implemented with excellence in mind from the start. We suggest you refer to the CORE Chapter 15 Addendum when developing new tools.

There are also a few additional comments mentioned in the closing conference which have been added for your consideration. These identify some possible opportunities for improvement that were not covered specifically by the audit criteria.

We would appreciate your location's feedback on the audit process. **Just complete the Audit Feedback form, Attachment 3, and return it to R. W. Barr.**

A copy of the "score sheet" summarizing the overall evaluation of the nine elements, and the copies of the score sheets for the nine main audit areas are attached as Attachment 4. A bar chart representation of those scores, compared with the ideal score, is attached as Attachment 5. Any of your staff who has been to auditor training can explain the point-weighting system to you.

Should you have any questions about this audit report or the follow-up procedures, let me know. The audit team would like to thank all of the Rockdale employees and managers who participated in the audit for their cooperation and hospitality. We sincerely hope that this audit will assist Rockdale's efforts in providing an injury-free workplace.

Robert W. Barr,
Audit Team Leader

(copy of cover letter and report on computer disk to J. Damiano)