

SHERIFFDOM OF SOUTH STRATHCLYDE, DUMFRIES And GALLOWAY
DETERMINATION

by

SHERIFF PRINCIPAL JOHN S MOWAT QC

in the

FATAL ACCIDENT INQUIRY

relating to the

LOCKERBIE AIR DISASTER

held at

Easterbrook Hall
Crichton Royal Hospital
DUMFRIES

1 October 1990 to 13 February 1991
DETERMINATION

by

JOHN STUART MOWAT, Esquire
Queen's Counsel
Sheriff Principal of South Strathclyde
Dumfries and Galloway

under

Section 6 of
THE FATAL ACCIDENTS AND SUDDEN
DEATHS INQUIRY (SCOTLAND) ACT 1976

The Sheriff Principal Determines:

(1) that

ELISABETH NICOLE MARIE AVOYNE, born on 5 May 1944, and residing at 2 Avenue Francois Patrocle, 78290 Croissy Sur Seine, France
JERRY DON AVRITT, born on 30 July 1942, and residing at 14031 Bexley Street, Westminster, California 92683, USA
NOELLE LYDIE BERTI, born on 24 December 1947, and residing at 1 Rue D'Armenomville, Paris, France 754017
SIV ULLA ENGSTROM, born on 21 September 1937, and residing at 6 Rays Avenue, Windsor, Berkshire
STACIE DENISE FRANKLIN, born on 16 February 1968 and residing at 1366 Thomas Avenue, San Diego, California 92109, USA
PAUL ISAAC GARRETT, born on 16 November 1947, and residing at 482 Cross Street, Napa, California 94559, USA
ELKE ETHA KUHNE, born on 17 March 1945, and residing at Langensalza Strasse 20, 3 Hanover, West Germany
MARIA NIEVES LARRACOECHEA, born on 3 March 1949, and residing at Castello 83, Madrid 28006, Spain
JAMES BRUCE MacQUARRIE, born on 30 September 1933, and residing at 32 North Road, Kensington, New Hampshire, 03833, USA
LILIBETH TOBILA MACALOLOOY, born on 2 November 1961 and residing at Morfelder Strasse 97, 6092 Kelsterbach, West Germany
MARY GERALDINE MURPHY, born on 14 May 1937, and residing at 1 Cranebrook Manor Road, Twickenham, Middlesex
JOCELYN REINA, born on 26 May 1962, and residing at 732 Great Western Road, Isleworth, Middlesex
MYRA JOSEPHINE ROYAL, born on 20 December 1958 and residing at 30 Clitherow Avenue, Hanwell, London
IRJA SYHNOVE SKABO, born on 3 July 1950 and residing at Ankerveien 17-0390, Oslo, Norway
MILUTIN VELIMIROVICH, born on 14 October 1953, and residing at 33 Dorset Way, Heston, Hounslow, Middlesex
RAYMOND RONALD WAGNER, born on 18 January 1936, and residing at 165 Pennington-Harbourton Road, Pennington, New Jersey 08534, USA.
died from multiple injuries at about 1905 hours on Wednesday 21 December 1988 at or near Lockerbie, Dumfriesshire in the course of their employment with Pan American World Airways

as members of the flight crew of Pan American World Airways Flight 103 on Boeing 747-121 Registration N739PA en route from London Heathrow Airport to John F Kennedy Airport, New York.

(2) That

JOHN MICHAEL GERARD AHERN, born on 16 April 1962, and residing at 127 Sherman Avenue, Rockville Centre, New York 11570, USA
 SARAH MARGARET AICHER, born on 9 February 1959, and residing at 30E Stanhope Gardens, London
 JOHN DAVID AKERSTROM, born on 20 May 1954, and residing at 6822 Ryan Road, Medina, Ohio 44256, USA
 RONALD ELY ALEXANDER, born on 15 July 1942, and residing at 425 East 58th Street, New York, New York 10022, USA
 THOMAS JOSEPH AMMERMAN, born on 6 August 1952, and residing at 2 Forrest Avenue, Old Tappan, New Jersey 07676, USA
 MARTIN LEWIS APFELBAUM, born on 16 August 1929, and residing at 2505 18th Street, Philadelphia, Pennsylvania 19103, USA
 RACHEL MARIE ASRELSKY, born on 26 November 1967, and residing at 605 Water Street, New York, New York 10002, USA
 JUDITH ELLEN BERNSTEIN or ATKINSON, born on 18 January 1951, and residing at Flat 3, 32 Cranley Gardens, South Kensington, London
 WILLIAM GARRETSON ATKINSON III, born on 18 August 1955, and residing at Flat 3, 32 Cranley Gardens, South Kensington, London
 CLARE LOUISE BACCIOCHI, born on 15 March 1969, and residing at 21 Hillside, Kingsbury, Tamworth, Warwickshire
 HARRY MICHAEL BAINBRIDGE, born on 16 November 1954 and residing at 9 Marisa Court, Montrose, New York 10548, USA
 STUART MURRAY BARCLAY, born on 28 November 1959, and residing at Honey Hill Farm, Barnard, Vermont 05031, USA
 JEAN MARY CRISPIN or BELL, born on 16 March 1944, and residing at The Silver Suite, Mellor House, Charles Street, Windsor, Berkshire
 JULIAN MacBAIN BENELLO, born on 28 December 1962, and residing at 143 Longwood Avenue, Apartment 4, Brookline, Massachusetts 02146, USA
 LAWRENCE RAY BENNETT, born on 5 November 1947 and residing at 2828 McKinley Street, Chelsea, Michigan 48118, USA
 PHILIP VERNON BERGSTROM, born on 21 December 1966, and residing at 400 South Lake Street, Apartment 9, CMA Forest Lake, Minnesota 55025, USA
 ALISTAIR DAVID BERKLEY, born on 11 April 1959, and residing at 30 Sutton Square, London
 MICHAEL STUART BERNSTEIN, born on 3 July 1952, and residing at 6012 Cairn Terrace, Bethesda, Maryland 20817, USA
 STEVEN RUSSELL BERRELL, born on 19 June 1968, and residing at 1216 South Ninth Street, Fargo, North Dakota 58103, USA
 SURINDER MOHAN BHATIA, born on 21 May 1937, and residing at 810 Camino Real Road, 202 Redondo Beach, Los Angeles, California 90277, USA
 KENNETH JOHN BISSETT, born on 19 December 1967, and residing at 120 East Hartsdale Avenue, Apartment 1K, Hartsdale, New York 10530, USA
 DIANE ANN BOATMAN-FULLER, born on 8 January 1953, and residing at 58 Swinburn Court, Blanchedowne Road, Denmark Hill, London
 STEPHEN JOHN BOLAND, born on 28 September 1968, and residing at 4 Century Road, Nashua, New Hampshire 03060, USA
 GLENN JOHN BOUCKLEY, born on 24 February 1961, and residing at 7300 Cedarpost Road, Apartment CI, Liverpool, New York 13088, USA
 PAULA MARIE ALDERMAN or BOUCKLEY, born on 14 October 1959 and residing at 7300 Cedarpost Road, Apartment CI, Liverpool, New York 13088, USA
 NICOLE ELISE BOULANGER, born on 28 October 1967, and residing at 46 Worthington Avenue, Shrewsbury, Massachusetts 01545, USA
 FRANCIS BOYER, born on 22 June 1945, and residing at 4 Place De L'Eperon, Lotissement, Auzeville, Toulouse 31320, France
 NICHOLAS BRIGHT, born on 29 August 1956, and residing at 7 Beals Street, Brookline, Massachusetts 02146, USA
 DANIEL SOLOMON BROWNER, (BEER), born on 20 August 1965 and residing at Kibbutz, Parod, Northern Israel
 COLLEEN RENEE BRUNNER, born on 4 January 1968 and residing at 7164 Parkside Drive, Hamburg, New York 14075, USA
 TIMOTHY GUY BURMAN, born on 9 October 1964, and residing at 49A Hotham Road, London
 MICHAEL WARREN BUSER, born on 10 August 1954, and residing at 99 Teaneck Road, Ridgely Park, New Jersey 07660, USA
 WARREN MAX BUSER, born on 22 September 1926, and residing at 169 Hillman Avenue, Glenrock, New Jersey 07452, USA
 STEVEN LEE BUTLER, born on 30 August 1953, and residing at 1141 South Clarkson Street, Denver, Colorado 80210, USA
 WILLIAM MARTIN CADMAN, born on 10 September 1956, and residing at 13 Surrendale Place, London
 FABIANA BENVENUTO or CAFFARONE, born on 30 September 1960, and residing at 21 Donne Place, London
 HERMAN LUIS CAFFARONE, born on 14 December 1960, and residing at 21 Donne Place, London
 VALERIE CANADY, born on 29 June 1963, and residing at 127 Jackson Avenue, South Park, Morgantown, West Virginia 3 26505-6567, USA
 GREGORY JOSEPH CAPASSO, born on 12 December 1967, and residing at 1841 East 33rd Street, Brooklyn, New York 11234, USA
 TIMOTHY MICHAEL CARDWELL, born on 5 July 1967, and residing at RD1, Box 203, Cresco, Pennsylvania 18326, USA
 BERNT WILMAR CARLSSON, born on 21 November 1938 and residing at Apartment 30, 207 West 106th Street, New York, New York 10025, USA
 RICHARD ANTHONY CAWLEY, born on 9 July 1945, and residing at 241 Central Park West, New York, New York 10024, USA
 FRANK CIULLA, born on 6 August 1943, and residing at 29 Clifford Drive, Parkridge, New Jersey 97656, USA
 THEODORA EUGENIA COHEN, born on 10 September 1968, and residing at 67 Wisconsin, Long Island, New York 11561, USA
 ERIC MICHAEL COKER, born on 23 April 1968, and residing at 137 Hilltop Road, Mendham, New Jersey 07945, USA
 JASON MICHAEL COKER, born on 23 April 1968, and residing at 137 Hilltop Road, Mendham, New Jersey 07945, USA
 GARY LEONARD COLASANTI, born on 1 August 1968, and residing at 60 Garfield Road, Melrose, Massachusetts 02176, USA
 BRIDGET MULROY or CONCANNON, born on 13 July 1935, and residing at 20 Nuffield Drive, Banbury, Oxfordshire
 SEAN CONCANNON, born on 18 February 1972, and residing at 20 Nuffield Drive, Banbury, Oxfordshire
 THOMAS CONCANNON, born on 21 November 1937, and residing at 20 Nuffield Drive, Banbury, Oxfordshire
 TRACEY JANE CORNER, born on 4 May 1971, and residing at 12 Springfield Avenue, Millhouses, Sheffield
 SCOTT MARSH CORY, born on 27 September 1968, and residing at 25 Chadwick Drive, Old Lyme Court, Connecticut 06371, USA
 WILLIS LARRY COURSEY, born on 25 August 1948, and residing at 307 Cresham Drive, San Antonio, Texas 78218, USA
 PATRICIA MARY COYLE, born on 4 June 1968, and residing at 62 Seiter Hill Road, Wallingford, Connecticut 06492, USA
 JOHN BINNING CUMMOCK, born on 31 May 1950, and residing at 271 Vistalmar Street, Coral Gables, Florida 33143, USA
 JOSEPH PATRICK CURRY, born on 21 March 1957, and residing at 885B Beach Street, Fort Devens, Massachusetts 01433, USA
 WILLIAM ALAN DANIELS, born on 28 March 1948, and residing at 20 Sweet Briar Court, Belle Mead, New Jersey 08502, USA
 GRETCHEN JOYCE DATER, born on 17 May 1968, and residing at 27 Mohawk Drive, Ramsey, New Jersey 07446, USA
 SHANNON DAVIS, born on 19 February 1969, and residing at 32 Isinglass Road, Shelton, Connecticut 06484, USA
 GABRIELE DELLA-RIPA, born on 3 April 1942, and residing at 406 Plainfield Avenue, Floral Park, New York 11001, USA
 OM DIKSHIT, born on 29 December 1933, and residing at 2955 Wylie Drive, Fairborn, Ohio 45324, USA
 JOYCE CHRISTINE DIMAURO, born on 9 May 1956, and residing at 352 East 18th Street, New York, New York 10003, USA
 GIANFRANCA DINARDO, born on 14 October 1962, and residing at Flat 4, 24 Cranley Gardens, South Kensington, London
 PETER THOMAS STANLEY DIX, born on 6 May 1953, and residing at 52 Coborn Road, Bow, London
 SHANTI DEVI or DIXIT, born on 14 December 1934, and residing at 2955 Wylie Drive, Fairborn, Ohio 45324, USA
 DAVID SCOTT DORNSTEIN, born on 3 April 1963, and residing at 7703 Seminole Avenue, Philadelphia, Pennsylvania 19126, USA
 MICHAEL JOSEPH DOYLE, born on 21 May 1958, and residing at 17 Arcadia Drive, Voorhees, New Jersey 08043, USA
 EDGAR HOWARD EGGLESTON III, born on 13 October 1964, and residing at RD4, Box 296A, Glen Falls, New York 12801, USA
 TURHAN ERGIN, born on 14 May 1966, and residing at 97 Cliffmore Road, West Hartford, Connecticut 06105, USA
 CHARLES THOMAS FISHER IV, born on 24 December 1953, and residing at 19 Beaufort Gardens, Flat 4, Chelsea, London
 CLAYTON LEE FLICK, born on 23 February 1963, and residing at 68 Rugby Road, Binley Woods, Coventry
 JOHN PATRICK FLYNN, born on 24 November 1967, and residing at 10 West Lake Drive, Montville, New Jersey 07045, USA
 ARTHUR JAY FONDILIER, born on 12 December 1955, and residing at 9 Seymour Place, West Armonk, New York 10504, USA
 ROBERT GERARD FORTUNE, born on 24 July 1948, and residing at 34-05 80th Street, Jackson Heights, New York 11372, USA
 PAUL MATTHEW STEPHEN FREEMAN, born on 2 April 1963, and residing at 19 Manor Mansions, Belsize Grove, London
 JAMES RALPH FULLER, born on 17 September 1938, and residing at 351 Lonepine Court, Bloomfield Hills, Michigan 48013, USA
 IBOLYA ROBERTNE DRUCKER or GABOR, born on 14 June 1909 and residing at Wesselenyi 6, Budapest, Hungary
 AMY BETH GALLAGHER, born on 30 August 1966, and residing at 246 Vista, Pointe Claire, Quebec, Canada

MATTHEW KEVIN GANNON, born on 11 August 1954, and residing at 611 North Ardmore, Los Angeles, California 90004, USA
KENNETH RAYMOND GARCZYNSKI, born on 17 October 1951, and residing at 1673 Hudson Avenue, North Brunswick, New Jersey 08902, USA
KENNETH JAMES GIBSON, born on 16 February 1968, and residing at 6/502 Infantry Army Post Office, New York, New York 09742, USA
WILLIAM DAVID GIEBLER, born on 8 July 1959, and residing at 52 Radcliffe Square, London
ANDREW CHRISTOPHER GILLIES-WRIGHT, born on 2 May 1964, and residing at 5 Esher Mews, Mitcham, Surrey
OLIVE LEONORA GORDON, born on 9 March 1963, and residing at 182 William Bonney Estate, London
LINDA SUSAN GORDON-GORGACZ, born on 15 September 1949, and residing at 5 Devere Gardens, Kensington, London
ANNE MADELENE CHABACK or GORGACZ, born on 27 September 1912 and residing at 5 East Wallace Avenue, Apartment 201, Newcastle, Pennsylvania 16101, USA
LORETTA ANNE GORGACZ, born on 15 March 1941, and residing at 5 East Wallace Avenue, Apartment 201, Newcastle, Pennsylvania 16101, USA
DAVID JAY GOULD, born on 3 January 1943, and residing at 5883 Bartlett Street, Pittsburg, Pennsylvania 15217, USA
ANDRE NIKOLAI GUEVORGIAN, born on 11 November 1956, and residing at 8 Carpenter Place, Sea Cliff, Long Island, New York 11579, USA
NICOLA JANE HALL, born on 3 February 1965, and residing at 34 Second Avenue, Illovo, Sandton 2196, South Africa
LORRAINE FRANCES BUSER or HALSCH, born on 6 November 1957, and residing at 24 Camborne Circle, Fairport, New York 14450, USA
LYNNE CAROL HARTUNIAN, born on 13 March 1967, and residing at 5 Tamarack Lane, Schenectady, New York 12309, USA
ANTHONY LACEY HAWKINS, born on 13 November 1931, and residing at 805 East 21st Street, Brooklyn, New York 11210, USA
PAMELA ELAINE HERBERT, born on 27 March 1969, and residing at 378 Parkway Drive, Battle Creek, Michigan 49017, USA
RODNEY PETER HILBERT, born on 19 July 1948, and residing at 117 South Congress Street, Newtown, Pennsylvania 18940, USA
ALFRED HILL, born on 29 June 1959, and residing at Heimenhofenstrasse 3, 8972 Sonthofen, West Germany
KATHERINE AUGUSTA HOLLISTER, born on 26 August 1968, and residing at 64-11 99th Street, Apartment 604, Rego Park, New York 11374, USA
JOSEPHINE LISA HUDSON, born on 14 May 1966, and residing at Flat 4, Arton Wilson House, North Wing, Roehampton Lane, London
MELINA KRISTINA HUDSON, born on 25 January 1972, and residing at 124 Lancaster Street, Albany, New York 12210, USA
SOPHIE AILETTE MIRIAM HUDSON, born on 22 September 1962, and residing at 14 Rue Therese, Paris 75001, France
KAREN LEE HUNT, born on 7 January 1968, and residing at 477 Maplewoods Lane, Webster, New York 14580, USA
ROGER ELWOOD HURST, born on 12 July 1950 and residing at 43 Lake Riconda Drive, Ringwood, New Jersey 07456, USA
ELIZABETH SOPHIE IVELL, born on 21 April 1969, and residing at 24 High Street, Roberts Bridge, East Sussex
KHALED NAZIR JAAFAR, born on 1 May 1968, and residing at 6519 Manor Street, Dearborn, Michigan 48126, USA
ROBERT VAN HOUTEN JECK, born on 8 October 1931, and residing at 145 Lake Drive, Montain Lakes, New Jersey 07046, USA
PAUL AVRON JEFFREYS, born on 13 February 1952, and residing at 8 Orchard Cottages, Clifton Road, Kingston-Upon-Thames, Surrey
RACHEL MARY ELIZABETH JONES or JEFFREYS born on 29 April 1965, and residing at 8 Orchard Cottages, Clifton Road, Kingston-Upon-Thames, Surrey
KATHLEEN MARY JERMYN, born on 27 December 1967, and residing at 35 Sheridan Place, Staten Island, New York 10312, USA
BETH ANN JOHNSON, born on 24 March 1967, and residing at 226 Wren Drive, Greensburg, Pennsylvania 15601, USA
MARY LINCOLN JOHNSON, born on 14 June 1963, and residing at 18 Adams Lane, Wayland, Massachusetts 01778, USA
TIMOTHY BARON JOHNSON, born on 30 November 1967, and residing at 2024 West Lake Avenue, Neptune Township, New Jersey 07753, USA
CHRISTOPHER ANDREW JONES, born on 4 March 1968, and residing at Courts Lane, Claverack, New York 12513, USA
JULIANNE FRANCES KELLY, born on 27 June 1968, and residing at 31 Massachusetts Avenue, Dedham, Massachusetts 02026, USA
JAY JOSEPH KINGHAM, born on 3 March 1944, and residing at 10821 Stanmore Drive, Potomac, Maryland 20854, USA
PATRICIA ANN KLEIN, born on 16 June 1953, and residing at 1108 Hamilton Avenue, Trenton, New Jersey 08629, USA
GREGORY KOSMOWSKI, born on 8 October 1948, and residing at 3253 Tipisco Lake Road, Milford, Michigan 48042, USA
MINAS CHRISTOPHER KULUKUNDIS, born on 17 December 1950, and residing at 6 Shalcomb Street, London
RONALD ALBERT LARIVIERE, born on 19 November 1955, and residing at 200 North Pickett Street, Apartment 903, Alexandria, Virginia 22304, USA
ROBERT MILTON LECKBURG, born on 12 October 1958, and residing at 601 Plainfield Avenue, Piscatawa, New Jersey 08854, USA
WILLIAM CHASE LEYRER, born on 24 August 1942, and residing at 52 Maple Avenue, Bayshore, New York 11706, USA
WENDY ANNE LINCOLN, born on 21 January 1965, and residing at 294 Notch Road, North Adams, Massachusetts 01247, USA
ALEXANDER LOWENSTEIN, born on 25 February 1967, and residing at 24 Old Orchard Road, Mendham Township, Morristown, New Jersey 07960, USA
LLOYD DAVID LUDLOW, born on 6 February 1947, and residing at Headquarters HQ Company, 4th Brigade, Army Post Office, New York, New York 09185, USA
MARIA THERESIA LURBKE, born on 26 November 1963, and residing at Arnsberger Strasse 47, 5983Balve-Beckum, West Germany
WILLIAM JOHN McALLISTER, born on 18 October 1962, and residing at 124 Peregrine Road, Sunbury on Thames, Middlesex
DANIEL EMMET McCARTHY, born on 2 November 1957, and residing at 127 92nd Street, Brooklyn, New York 11209, USA
ROBERT EUGENE McCOLLUM, born on 12 May 1927, and residing at 1248 Thomas Road, Wayne, Pennsylvania 19087, USA
CHARLES DENNIS McKEE, born on 3 December 1948, and residing at HOS USA Intelligence Section Command, Arlington Hall Station, Virginia 22212, USA
BERNARD JOSEPH McLAUGHLIN, born on 2 December 1958, and residing at 108 Norwood Avenue, Cranston, Rhode Island 02905, USA
WILLIAM EDWARD MACK, born on 24 April 1958, and residing at 202 East 92nd Street, New York, New York 10128, USA
DOUGLAS EUGENE MALICOTE, born on 31 August 1966, and residing at 97th Signal Battalion, Army Post Office, New York, New York 02028, USA
WENDY GAY FORSYTH or MALICOTE, born on 31 July 1967, and residing at 97th Signal Platoon, US Army Base, Mannheim, West Germany
ELIZABETH LILLIAN MAREK, born on 17 February 1958, and residing at 202 West 92nd Street, New York, New York 10025, USA
LOUIS ANTHONY MARENGO, born on 9 February 1955, and residing at 1579 Stoney Creek Drive, Rochester, Michigan 48063, USA
NOEL GEORGE MARTIN, also known as Joseph Emmanuel Barzey, born on 31 May 1961, and residing at 1 Ashdon House, North Old Road, Clapton, Gloucestershire
DIANE MARIE MASLOWSKI, born on 10 August 1958, and residing at 130 Prospect Road, Haddonfield, New Jersey 08033, USA
JANE SUSAN MELBER, born on 1 January 1961, and residing at 17 Melrose Gardens, Burnt Oak, Middlesex
JOHN MERRILL, born on 11 July 1953, and residing at 1 Heath Hall, High Street, Baldock, Hertfordshire
SUZANNE MARIE MIAZGA, born on 31 July 1966, and residing at RDI, Box 221, Benton Road, Marcy, New York 13403, USA
JOSEPH KENNETH MILLER, born on 27 May 1932, and residing at 381 Westwood Road, Woodmere, New York 11598, USA
JEWEL COURTNEY MITCHELL, born on 14 June 1956, and residing at 1154 Union Street, Brooklyn, New York 11225, USA
RICHARD PAUL MONETTI, born on 11 September 1968, and residing at 1615 Longfellow Drive, Cherry Hill, New Jersey 08003, USA
JANE ANN MORGAN, born on 19 March 1951, and residing at Flat 1, 10 Brompton Square, London
EVA INGEBORG FUCHS or MORSON, born on 29 April 1940, and residing at 185 East 85th Street, New York, New York 10028, USA
HELGA RACHAEL MOSEY, born on 21 September 1969, and residing at 42 Tifford Road, Oldbury, Warley, West Midlands
INGRID ELISABETH SVENSSON or MULROY, born on 22 April 1963, and residing at Kamnarsvagen 9L126, 22246 Lund, Sweden
JOHN MULROY, born on 1 April 1929, and residing at 35 Cherrywood Drive, East North Port, New York 11731, USA
SEAN KEVIN MULROY, born on 3 May 1963, and residing at Kamnarsvagen, 9L126, 22246 Lund, Sweden
KAREN ELIZABETH NOONAN, born on 26 December 1967, and residing at 1901 Glenmill Road, Potomac, Maryland 20854, USA
DANIEL EMMETT O'CONNOR, born on 22 September 1957, and residing at 17 Lawley Street, Dorchester, Massachusetts 02122, USA
MARY DENICE O'NEILL, born on 2 April 1967, and residing at 1675 Metropolitan Avenue, Bronx, New York 10462, USA
ANNE LINDSEY OTENASEK, born on 13 January 1967, and residing at 110 Tunbridge Road, Baltimore, Maryland 21212, USA
BRYONY ELISE OWEN, born on 29 April 1987, and residing at 59 Chelsea Park, Easton, Bristol
GWYNETH YVONNE MARGARET OWEN, born on 3 May 1959, and residing at 59 Chelsea Park, Easton, Bristol
LAURA ABIGAIL OWENS, born on 8 January 1980, and residing at 101 Rockingham Road, Cherry Hill, New Jersey 08034, USA
MARTHA IVES or OWENS, born on 2 June 1944, and residing at 101 Rockingham Road, Cherry Hill, New Jersey 08034, USA
ROBERT PLACK OWENS, born on 5 March 1943, and residing at 101 Rockingham Road, Cherry Hill, New Jersey 08034, USA
SARAH REBECCA OWENS, born on 9 December 1974, and residing at 101 Rockingham Road, Cherry Hill, New Jersey 08034, USA
ROBERT ITALO PAGNUCCO, born on 20 October 1937, and residing at Oscaleta Road, South Salem, New York 10590, USA
CHRISTOS MICHAEL PAPADOPOULOS, born on 11 November 1943, and residing at 217 Harborview, North Lawrence, New York 12938, USA
PETER RAYMOND PEIRCE, born on 28 September 1948, and residing at 860 East Boundry Street, Perrysburg, Ohio 43551, USA

MICHAEL COSIMO PESCATORE, born on 6 September 1955, and residing at 5482 Banbery Drive, Medina, Solon, Ohio 44139, USA
 SARAH SUSANNAN BUCHANAN PHILIPPS, born on 15 August 1968, and residing at 78 Hull Street, Newtonville, Massachusetts 02160, USA
 FREDERICK SANDFORD PHILLIPS, born on 8 May 1961, and residing at 12 Van Lee Drive, Little Rock, Arkansas 72205, USA
 JAMES ANDREW CAMPBELL PITT, born on 6 November 1964, and residing at 96 College Street, South Hadley, Massachusetts 01075, USA
 DAVID PLATT, born on 13 December 1955, and residing at 76 Belfast Avenue, Staten Island, New York 10306, USA
 WALTER LEONARD PORTER, born on 10 March 1953, and residing at 85, Remsen Avenue, Brooklyn, New York 11212, USA
 PAMELA LYNN POSEN, born on 30 January 1968, and residing at 88 Haviland Road, Harrison, New York 10528, USA
 WILLIAM PUGH, born on 29 February 1932, and residing at 103 South Claremont Avenue, Margate City, New Jersey 08402, USA
 CRISOSTOMO ESTRELLA QUIGUYAN, born on 16 March 1945, and residing at 37 Park View, Monks Park, Wembley, London
 RAJESH TARSIS PRISKEL RAMSES, born on 26 May 1953, and residing at 10 Eastfield Court, Eastile Road, Leicester
 ANMOL RATTAN, born on 24 September 1986, and residing at 24301 Panama, Warren, Michigan 48091, USA
 GARIMA DIXIT or RATTAN, born on 15 July 1959, and residing at 24301 Panama, Warren, Michigan 48091, USA
 SURUCHI RATTAN, born on 20 June 1985, and residing at 24301 Panama, Warren, Michigan 48091, USA
 ANITA LYNN REEVES, born on 3 September 1964, and residing at 801 Fairlawn Avenue, Apartment 4, Laurel, Maryland 20707, USA
 MARK ALAN REIN, born on 12 February 1944, and residing at 220 East 63rd Street, New York, New York 10021, USA
 DIANE MARIE RENCEVICZ, born on 13 July 1967, and residing at 325 West Union Street, Burlington, New Jersey 08016, USA
 LOUISE ANN ROGERS, born on 13 February 1967, and residing at 3508 Sundown Farms Way, Olney, Maryland 20832, USA
 EDINA ROLLER, born on 24 November 1983, and residing at Vac, Koto Utca 7, H-2600, Hungary
 JANOS GABOR ROLLER, born on 26 March 1959, and residing at Vac, Koto Utca 7, H-2600, Hungary
 ZSUZSANA PISAK or ROLLER, born on 21 December 1961, and residing at Vac, Koto Utca 7, H-2600, Hungary
 HANNE MARIA MAIJALA or ROOT, born on 15 December 1962, and residing at 20 West 72nd Street, Apartment 609, New York, New York 10023, USA
 SAUL MARK ROSEN, born on 24 November 1953, and residing at 116 Burnham Road, Morris Plains, New Jersey 07950, USA
 ANDREA VICTORIA ROSENTHAL, born on 5 February 1966, and residing at 784 Park Avenue, New York, New York 10021, USA
 DANIEL PETER ROSENTHAL, born on 2 June 1968, and residing at 36 Hamilton Avenue, Staten Island, New York 10301, USA
 ARNAUD DAVID RUBIN, born on 18 May 1960, and residing at 68 Avenue Des Croix Du Feu, Waterloo 1410, Belgium
 ELYSE JEANNE SARACENI, born on 1 June 1968, and residing at Mews Room 17, 1 Park Crescent Mews East, London
 SCOTT CHRISTOPHER SAUNDERS, born on 20 May 1967, and residing at 2996 Macungie Road, Macungie, Pennsylvania 18062, USA;
 TERESA ELIZABETH JANE WILSON or SAUNDERS, born on 24 October 1960, and residing at 124 Peregrine Road, Sunbury on Thames, Middlesex
 JOHANNES OTTO SCHAEUBLE, born on 8 August 1947, and residing at Kappellenweg 6, 7407 Rottenburg, Wurlmingen, West Germany
 ROBERT THOMAS SCHLAGETER, born on 28 October 1967, and residing at 814 West Shore Road, Warwick, Rhode Island 02889, USA
 THOMAS BRITTON SCHULTZ, born on 5 January 1968, and residing at 142 Wilton Road, Ridgefield, Connecticut 06877, USA
 SALLY ELIZABETH SCOTT, born on 17 January 1966, and residing at 4 Woodvale Lane, Huntingtonton, New York 11743, USA
 AMY ELIZABETH SHAPIRO, born on 28 October 1967, and residing at 77 Brook Run Lane, Stamford, Connecticut 06905, USA
 MRIDULA SHASTRI, born on 12 February 1964, and residing at Room 1, St Johns College, 11 St Johns Street, Oxford
 JOAN LICHTENSTEIN or SHEANSHANG, born on 16 December 1942, and residing at 4 East 89th Street, New York, New York 10128, USA
 IRVING STANLEY SIGAL, born on 23 May 1953, and residing at 120 East Delaware Avenue, Pennington, New Jersey 08574, USA
 MARTIN BERNARD CARRUTHERS SIMPSON, born on 25 October 1936, and residing at 249 Garfield Place, Brooklyn, New York 11215, USA
 CYNTHIA JOAN SMITH, born on 6 October 1967, and residing at 340 Brook Road, Milton, Massachusetts 02186, USA
 INGRID ANITA LEADGARD or SMITH, born on 12 November 1957, and residing at Malthouse Cottage, Church Lane, Bray, Berkshire
 JAMES ALVIN SMITH, born on 11 March 1933, and residing at 139 East 35th Street, New York, New York 10016, USA
 MARY EDNA HALL or SMITH, born on 14 July 1954, and residing at 97th Signal Battalion, Army Post Office, New York, New York 09028, USA
 GERALDINE ANNE O'GARA or STEVENSON, born on 31 March 1951, and residing at 44 Manor Road, South Hinchley Wood, Esher, Surrey
 HANNAH LOUISE STEVENSON, born on 23 September 1978, and residing at 44 Manor Road, South Hinchley Wood, Esher, Surrey
 JOHN CHARLES STEVENSON, born on 13 September 1950, and residing at 44 Manor Road, South Hinchley Wood, Esher, Surrey
 RACHAEL STEVENSON, born on 1 September 1980, and residing at 44 Manor Road, South Hinchley Wood, Esher, Surrey
 CHARLOTTE ANN McGUIRE or STINNETT, born on 7 February 1952, and residing at 1526 Lime Leaf Lane, Duncanville, Texas 75137, USA
 MICHAEL GARY STINNETT, born on 27 May 1962, and residing at 1526 Lime Leaf Lane, Duncanville, Texas 75137, USA
 STACEY LEANNE STINNETT, born on 30 July 1979, and residing at 1526 Lime Leaf Lane, Duncanville, Texas 75137, USA
 JAMES RALPH STOW, born on 18 July 1939, and residing at 205 East 95th Street, Apartment 31D, New York, New York 10128, USA
 ELIA G STRATIS, born on 17 June 1945, and residing at 57 Longridge Road, Montvale, New Jersey 07645, USA
 ANTHONY SELWYN SWAN, born on 15 May 1959, and residing at 41 Halsey Street, Brooklyn, New York 11216, USA
 FLORA MacDONALD MARGARET SWIRE, born on 22 December 1964, and residing at William Goodenough House, Mecklenburgh Square, Bloomsbury, London
 MARC ALEX TAGER, born on 3 August 1966, and residing at 3 Cedars Close, Hendon, London
 HIDEKAZU TANAKA, born on 13 May 1962, and residing at Flat 6, 110 Gloucester Terrace, London
 ANDREW ALEXANDER TERAN, born on 31 August 1968, and residing at Pearson College, Yale University, New Haven, Connecticut 06520, USA
 ARVA ANTHONY THOMAS, born on 26 April 1971, and residing at 14075 Marlowe, Detroit, Michigan 48227, USA
 JONATHAN RYAN THOMAS, born on 29 September 1988, and residing at 15838 Harden Circle, Southfield, Michigan 48075, USA
 LAWANDA COLEMAN or THOMAS, born on 17 February 1967, and residing at 15838 Harden Circle, Southfield, Michigan 48075, USA
 MARK LAWRENCE TOBIN, born on 4 April 1967, and residing at 36 St Paul's Road, North Hempstead, New York 11550, USA
 DAVID WILLIAM TRIMMER-SMITH, born on 26 April 1937, and residing at 222 East 56th Street, Apartment SA, New York, New York 10022, USA
 ALEXIA KATHRYN TSAIRIS, born on 6 July 1968, and residing at 379 Vance Avenue, Franklyn Lakes, New Jersey 07417, USA
 BARRY JOSEPH VALENTINO, born on 25 February 1960, and residing at 119 Haight Street, Apartment 16, San Francisco, California 94102, USA
 TOMAS FLORO VAN TIENHOVEN, born on 30 May 1943, and residing at Jose C Paz, 738 Accassuso, Buenos Aires, Argentina and also at 11 Argyll Road, London
 ASAAD EIDI VEJDANY, born on 24 February 1942, and residing at 32 Somerset Drive South, Great Neck, New York 11020, USA
 NICHOLAS ANDREAS VRENIOS, born on 20 August 1968, and residing at 6628 32nd Street, NW Washington DC 20015, USA
 PETER VULCU, born on 1 August 1967, and residing at 1541 Overlook, Alliance, Ohio 44601, USA
 JANINA JOZEFA RUSNIAK or MITKA or WAIDO, born on 19 March 1927, and residing at 2257 North Lavergne Avenue, Chicago, Illinois 60639, USA
 THOMAS EDWIN WALKER, born on 11 December 1941, and residing at 192 Taylor Street, Wallaston, Quincy, Massachusetts 02170, USA
 KESHA WEEDON, born on 2 October 1968, and residing at 2525 Aqueduct Avenue, Bronx, New York 10468, USA
 JEROME LEE WESTON, born on 11 November 1943, and residing at 3134 Eastern Parkway, Baldwin, Long Island, New York 11510, USA
 JONATHAN WHITE, born on 14 July 1955, and residing at 11229 Blix Street, North Hollywood, California 91620, USA
 BONNIE LEIGH RAFFERTY or WILLIAMS, born on 12 January 1967 and residing at 516th Engineer Company, Army Post Office, New York, New York 09165, USA
 BRITTANY LEIGH WILLIAMS, born on 13 October 1988, and residing at 516th Engineer Company, Army Post Office, New York, New York 09165, USA
 ERIC JON WILLIAMS, born on 15 August 1964, and residing at 516th Engineer Company, Army Post Office, New York, New York 09165, USA
 GEORGE WATERSON WILLIAMS, born on 17 May 1964, and residing at 305 Garnett Road, Joppa, Maryland 21085, USA
 STEPHANIE LEIGH WILLIAMS, born on 23 May 1987, and residing at 516th Engineer Company, Army Post Office, New York, New York 09165, USA
 MIRIAM LUBY WOLFE, born on 26 September 1968, and residing at 120 Kennedy Drive, Severna Park, Maryland 21146, USA
 CHELSEA MARIE WOODS, born on 6 February 1988, and residing at Apartment 1151, 6750 Vogelweh Housing, West Germany
 DEDERA LYNN COPELAND or WOODS, born on 4 February 1961, and residing at Apartment 1151, 6750 Vogelweh Housing, West Germany
 JOE NATHAN WOODS, born on 5 March 1960, and residing at Apartment 1151, 6750 Vogelweh Housing, West Germany
 JOE NATHAN WOODS, JNR, born on 24 September 1986, and residing at Apartment 1151, 6750 Vogelweh Housing, West Germany
 MARK JAMES ZWYNENBURG, born on 14 October 1959, and residing at 151 Foxwood Road, West Nyack, New York 10994, USA,

who were passengers on said aircraft, died from multiple injuries at about 1905 hours on Wednesday 21 December 1988 at or near Lockerbie, Dumfriesshire,

(3) That

JOANNE FLANNIGAN, born on 13 June 1978,
 KATHLEEN MARY DOOLAN or FLANNIGAN, born on 26 January 1947, and
 THOMAS BROWN FLANNIGAN, born on 20 December 1944, all residing at 16 Sherwood Crescent, Lockerbie, Dumfriesshire;
 DORA HENRIETTA MOFFAT or HENRY, born on 27 March 1932 and
 MAURICE PETER HENRY, born on 18 July 1925, both residing at Arranmore, 13 Sherwood Crescent, Lockerbie, Dumfriesshire;
 MARY BROWELL or LANCASTER, born on 12 January 1907, and residing at 11 Sherwood Crescent, Lockerbie, Dumfriesshire;
 JEAN AITKEN MURRAY, born on 29 November 1906, and residing at Westerly, 14 Sherwood Crescent, Lockerbie, Dumfriesshire; and
 JOHN SOMERVILLE, born on 25 March 1948,
 LYNSEY ANNE SOMERVILLE, born on 13 July 1978,
 PAUL SOMERVILLE, born on 21 January 1975, and
 ROSALEEN LEITER HANNAY or SOMERVILLE born on 31 May 1948, all residing at 15 Sherwood Crescent, Lockerbie, Dumfriesshire,

all died from multiple injuries and/or severe burning at about 1905 hours on Wednesday 21 December 1988 at Sherwood Crescent, Lockerbie, Dumfriesshire.

(4) That the cause of all the said deaths was the detonation of an improvised explosive device located in luggage container AVE 4041 situated on the left side of the forward hold of said aircraft Registration N739PA. The detonation caused the nose and flight deck of the aircraft to become detached and the rest of the aircraft to descend out of control and to break up, eventually crashing into the ground at or near Lockerbie. The wing and centre fuselage section crashed in the Sherwood Crescent area of the town and caused the deaths referred to in Finding (3) hereof. The deaths referred to in Findings (1) and (2) hereof resulted from injuries sustained either as a direct result of the explosion and the disintegration of the aircraft or from impact with the ground.

(5) That the said device consisted of Semtex-type plastic explosive concealed in a Toshiba radio-cassette player contained in a Samsonite suitcase which was one of the pieces of baggage placed in the said luggage container by employees of Pan American World Airways at Heathrow Airport, London. The contents of said container consisted of six or seven pieces of baggage collected from the interline shed and about thirty five pieces of baggage which had been unloaded from Pan American flight 103A from Frankfurt to Heathrow and were labelled as destined for airports in the United States, including JFK Airport New York and Detroit. The bags from the interline shed had been checked in by passengers booked on flights into Heathrow on airlines other than Pan American World Airways to connect with Pan American Flight 103 to New York.

(6) That the primary cause of the said deaths was a criminal act of murder.

(7) That the aircraft involved arrived at Heathrow at about 1210 hours on 21 December 1988 from San Francisco and was under constant guard until it left Heathrow as Flight 103 that evening. The aircraft was fully airworthy when it took off from Heathrow at 1825 hours.

(8) That the bags transferred from Pan American Flight 103A were taken directly from that aircraft in the said baggage container to Pan American Flight 103. They were not counted or weighed so as to check that they corresponded to the baggage checked in at Frankfurt by passengers proceeding to New York or reconciled in any other way with such passengers. They were not x-rayed at Heathrow.

(9) That the suitcase containing the said explosive device was among the said pieces of baggage transferred from Pan American Flight 103A and was unaccompanied both on the flight from Frankfurt to Heathrow and on the flight from Heathrow.

(10) That the said suitcase probably arrived at Frankfurt on a flight or an airline other than Pan American and so was interlined to Pan American there. It was loaded on to and allowed to fly on Flight 103A without being identified as an unaccompanied bag.

(11) That bags interlined to Pan American at Heathrow were subjected to x-ray screening but there was no reconciliation procedure there to ensure that interline passengers and their baggage travelled on the same aircraft. The same procedure probably applied at Frankfurt.

(12) That Khaled Nazir Jaafar originated as a passenger at Frankfurt. He checked in two bags, neither of which was the suitcase containing the device and neither of which contained any traces of illegal drugs. There was nothing to connect him with the said suitcase containing the device.

(13) That in 1988 it was accepted (a) that there was a danger of an explosive device being concealed in a piece of baggage and loaded on to an aircraft; (b) that such a piece of baggage was likely to be unaccompanied; and (c) that such a bag was likely to be introduced by being interlined at a particular airport from another airline and that the person introducing it would not check in as a passenger at that airport.

(14) That positive passenger/baggage reconciliation was recognised as an important element in any system designed to prevent the carriage of an unaccompanied bag on an aircraft.

(15) That the limitations of x-ray screening as a means of detecting plastic explosives contained in electronic equipment were generally recognised as at December 1988.

(16) That in all the circumstances the procedure of transferring baggage from Flight 103A to Flight 103 without any security check involved a substantial risk that an unaccompanied bag containing an explosive device would be so transferred.

(17) That it would have been a reasonable precaution to have instituted or reverted to a positive passenger/baggage reconciliation procedure in relation to interline baggage at Frankfurt designed to detect the presence of any unaccompanied bag. Such a precaution might have avoided the deaths.

(18) That in the absence of such a procedure at Frankfurt, it would have been a reasonable precaution to have instituted a positive passenger/baggage reconciliation procedure in relation to bags transferred from Flight 103A to Flight 103, either by counting the bags so transferred or by a physical match. Such a precaution might have prevented the deaths.

(19) That reliance on x-ray screening alone in relation to interline baggage at Heathrow and Frankfurt was a defect in a system of working which contributed to the deaths.

(20) That the Department of Transport's direction (Production 71) and the Circulars (Productions 21/1 and 64), as interpreted by the Department, afforded insufficient protection against the possibility that an undetected unaccompanied bag would be transferred from Flight 103A to Flight 103.

SHERIFF PRINCIPAL'S CHAMBERS

AIRDRIE: 18 March 1991.

NOTE

This is a Fatal Accident Inquiry which was ordered by me on the application of the Procurator Fiscal for the District of Dumfries in terms of Section 1(1) of the Fatal Accidents and Sudden Deaths Inquiry (Scotland) Act 1976. It has been a very unusual example of an Inquiry of this type. While Section 1(3)(c) of the Act provides that an application for an Inquiry may relate to more than one death, an Inquiry into 270 deaths is unprecedented. Again, the application was made on two separate grounds. In relation to the crew members of Pan American Flight 103 who died in the course of their employment an Inquiry required to be held in terms of Section 1(1)(a) of the Act. In relation to the other deaths, it appeared to the Lord Advocate to be expedient in the public interest that an Inquiry under the Act should be held.

In terms of Section 3 of the Act, I was bound to answer the application by making an order fixing a time and place for the Inquiry. At that stage, I had to contemplate the possibility

(1) that the next-of-kin of all the deceased would exercise their right to appear or be represented; (2) that large numbers of the public might have to be accommodated and (3) that an unusual amount of space would have to be allocated to the Press. For these reasons, I decided that none of the courthouses in the Sheriffdom would be a suitable place and I am grateful to the Dumfries and Galloway Health Board for making available the premises and facilities at Easterbrook Hall and to the Scottish Courts Administration for adapting the Hall for use as a court-room and equipping it in such a way as to make the proceedings readily available to the public. In the end of the day most of the relatives of the deceased were served by two teams of representatives and the well of the court was less crowded than had been feared. I should express my appreciation of the contribution made by the late Mr Michael Hughes in keeping the Clerk to the Inquiry and myself informed of the arrangements being made for the representation of the majority of the relatives resident in the United States of America.

I heard evidence from 131 witnesses in the course of 55 days and then heard submissions from the Crown, from those representing the next of kin of the deceased, and on behalf of Pan American Corporation and its associated companies, the British Airports Authority, and the Department of Transport as to the form and content of my determination under Section 6(1) of the Act. There was general agreement as to the findings I should make in terms of sub paragraphs (a) and (b) of that Section. It was inevitable that some of the submissions in relation to sub paragraph (c) of the Act proposed findings which would, in my view, have constituted a determination that certain persons or organisations had been negligent in some respect. I have, therefore, had to consider how far it is proper for the presiding Sheriff to make such findings in a Fatal Accident Inquiry.

It is generally recognised that such an Inquiry is not the proper forum for the determination of questions of criminal or civil liability. This was reaffirmed in the case of *Black v Scott Lithgow Ltd* 1990 SLT 612. The reasons for such a decision are clear. In a criminal case, or in a civil action based on delict, the accused or the defender is given full notice of the allegations made against him either in the form of a complaint or an indictment or by the written pleadings. In the vast majority of cases he is entitled to hear all the evidence against him before putting forward his defence. In a Fatal Accident Inquiry no such notice is given and the bulk of the evidence, indeed in most cases all the evidence, is led by the Crown with a view to eliciting the facts of the situation surrounding the death or deaths. It is true that one of the recognised purposes of the Inquiry is to ascertain the facts in such a way as to enable the relatives of the deceased to consider whether they provide a basis for a civil action but it is not for the presiding sheriff to make a judgment on that question in his determination. The present Inquiry is, as I have said, a very unusual one and one special feature is that it has taken place some two years after the deaths to which it relates and that one of the organisations represented is the defendant in a civil action elsewhere and so has had some notice of what was likely to be the line of any attack made upon it in the proceedings before me. That does not, to my mind, alter the fact that the procedure of this Inquiry is not designed to enable a proper defence to be mounted against such an attack. Section 6(1)(c) of the Act allows the Sheriff to make findings relating to "reasonable precautions, if any, whereby the death or any accident resulting in the death, might have been avoided". Section 6(1)(d) relates to "the defect, if any, in any system of working which contributed to the death or any accident resulting in the death". It is clear that in some cases a statement that a reasonable precaution might have prevented the deaths carries with it the implication that a certain person or organisation owed a duty to take that precaution and so was negligent. The same situation applies even more clearly to a finding under sub paragraph (d). It is for that reason, it seems to me, that Section 6(3) of the Act provides that the sheriff's determination in a Fatal Accident Inquiry may not be founded upon in any other judicial proceedings.

In that situation, I have come to the view that any finding under Section 6(1)(c) should avoid, so far as possible, any connotation of negligence. Accordingly, it should not contain any

indication as to whether any person was under a duty either at common law or under statute, to take the precaution identified in the finding. The same consideration applies to any finding under Section 6(1)(e) of the Act which can relate to “any other facts which are relevant to the circumstances of the death”. I recognise on the other hand that it will be impossible in this Note, in which I try to explain how I have dealt with the submissions made to me, to avoid giving some indication of my view as to how far the evidence appears to point towards the existence of a duty to take certain precautions.

While on the subject of limitations to the scope of the Inquiry I should say that I had no hesitation in accepting the objections of the Crown to the leading of evidence the publication of which might, in the view of the Lord Advocate, impede the criminal investigation which is still continuing or, perhaps, more importantly, render it impossible to bring the criminals to trial if they were discovered. Equally, I had no hesitation in upholding the objection of Mr McEachran, for the Department of Transport, to any evidence relating to the operation of the intelligence agencies of the United Kingdom, as being contrary to the national interest. On the other hand, I did allow Dr Swire, who appeared on his own behalf, to elicit in cross-examination and to lead evidence in relation to the part which the Government should be expected to play in promoting aviation security. This was tenuously linked to the state of technology in relation to the detection of explosive substances at the time of the disaster and how far the Government was responsible, through the Department of Transport, for the lack of research and development in that field. I should say now that I have no intention of making any findings or comment on these matters which to my mind lie, and should remain, in the field of politics. I did not, however, allow him to lead evidence, at a very late stage of the Inquiry, into the state of airport security at Heathrow. This was because no questions in relation to any specific deficiencies had been put to airport officials who had given evidence earlier in the Inquiry.

SUBMISSIONS

The submissions made as to the findings I should make were supported by argument and detailed reference to the evidence but I find it convenient to list the submissions themselves at this stage and to deal with the arguments and the evidence in relation only to those which were controversial. I had circulated draft findings in relation to matters which I considered were unlikely to be controversial before submissions were made to me, and after some amendment, these now form findings (1) to (5) of my determination.

For the Crown, Mr Hardie submitted firstly that the aircraft had been proved to have been airworthy when it took off from Heathrow and that it had been under guard continuously during its time on the ground there, so that there had been no opportunity to plant an explosive device on the aircraft before it was loaded with baggage. He concurred, with one reservation, in the draft findings which had been circulated and went on to submit that three additional findings under Section 6(1)(e) of the Act should be made.

- (1) The Samsonite suitcase in which the device was contained was unaccompanied.
- (2) It was among the bags from Flight 103A which arrived at Heathrow from Frankfurt and which were loaded into container 4041 and transferred to Flight 103.
- (3) There was no reconciliation of the bags so transferred with passengers booked to fly to New York.

Turning to the question of precautions which might have prevented the accident or deaths, he submitted that no deficiency in the response to the disaster of the people of Lockerbie, the emergency services or the voluntary organisations could be said to have contributed to any of the deaths. He then submitted that Pan American Airways had failed to comply with Section 15 of the Air Carrier Standard Security Program (ACSSP) which set out the requirements of the Federal Aviation Administration in relation to special risk airports such as Frankfurt and Heathrow and, in particular, with Section 15C (1) (a) which required baggage/passenger reconciliation. Pan American had used x-ray in place of reconciliation in respect of interline

baggage. They suggested that they had been allowed to do so by a waiver from Mr Salazar, then director of FAA, but Mr Hardie submitted that on the evidence, any decision as to an exemption had no bearing on the requirements of Section 15. Had Section 15C (1)(a) been complied with in relation to interline baggage, the unaccompanied bag containing the device should have been detected and the accident might have been prevented. He then submitted that Pan American Airways had failed to comply with the requirements of the Department of Transport in relation to the arrival of Flight 103A from Frankfurt and the departure of Flight 103 from Heathrow. He maintained that the circular issued by the Department in September 1985 (Production 12/1) recommended that there should be a reconciliation between baggage to be conveyed aboard Flight 103 and passengers who boarded the aircraft. Had Pan American sought to make such a reconciliation in relation to the baggage being transferred, the unaccompanied bag containing the device might have been identified.

Mr Hardie said that while the Crown made no submission that the bag containing the device came to Frankfurt as an interline bag it would not “seek to discourage” such a finding. That would indicate that Alert employees at Frankfurt had failed to identify the radio cassette player under x-ray and might raise questions as to the training and competence of these employees and the desirability of relying on x-ray alone. It might justify a finding that had Pan American not relied on x-ray alone, the accident might not have occurred. There might also be room for a finding that the Alert management failed to pass on significant information to their employees.

Mr Hardie then considered the position of the Department of Transport. He submitted firstly that there was insufficient evidence to justify a finding that there was available at the material time equipment which, had it been installed at Heathrow, might have prevented the disaster. He went on to submit that if the Department’s view of their directive and circulars was correct and they did not provide measures which would identify an unaccompanied bag in the absence of a “no show” passenger, the issuing of a circular containing such measures would have been a reasonable precaution which might have prevented the accident. If the circular (21/1 of Process) did recommend such a measure, it would have been a reasonable precaution for the Department to check whether the recommendation had been followed by operators and, if not, to issue and enforce a direction to the same effect.

Mr Hardie had made it clear that the Crown was anxious that if I were concerned about any aspect of aviation security but felt unable to make a finding that it was “relevant to the circumstances of the deaths” I should bring it to the attention of the authorities in the public interest by way of comment in this Note. He suggested that I might consider (a) whether the establishment of a properly funded inspectorate within the Department might have avoided the disaster and (b) the inordinate delay between the initial telex to UK operators relating to the “Toshiba warning” and the ultimate circular dated 19 December 1988 but not issued until January. In this connection he suggested that it would not be appropriate to say that had the photographs been produced immediately the accident might have been avoided.

Mr Gill, appearing on behalf of a group of bereaved relatives known as the Lockerbie Air Disaster Group, summarised his submissions as follows:

(1) Pan American Airways, knowing the dangers involved, risked the lives of their passengers and crew by abandoning passenger/baggage reconciliation procedures in relation to interline baggage for reasons of commercial advantage.

(2) The Department of Transport failed effectively to inspect and supervise the operation of the airline, to implement and enforce their own security requirements and to appreciate the risks involved in Pan American’s continuation of an x-ray only policy in regard to interline baggage and the tarmac transfer procedure. He concurred with Mr Hardie in accepting the draft findings which had been circulated but considered that it should be made plain that the likeliest explosive to have been used in the device was of the Semtex type. He submitted that three further conclusions could be drawn in relation to the suitcase; (i) It was unaccompanied; (ii) It

came on to Flight 103 from the feeder flight from Frankfurt; and (iii) On a balance of probabilities it was interlined into the Pan American system at Frankfurt.

He submitted that on a balance of probabilities the quality of Alert security at Frankfurt was unsatisfactory. He then submitted that on all the evidence, Pan American's decision to rely on x-ray alone in relation to interline baggage was reckless and dangerous as was the failure to review it in the latter half of 1988. In the absence of any waiver it clearly breached Section 15C(1)(a) of the ACSSP. He submitted that the evidence in support of a waiver which effectively excluded the provisions of Section 15 was virtually non-existent. In any event, if x-ray only was a dangerous procedure the airline was not entitled to rely on any such waiver, which was overtaken by subsequent events. The tarmac transfer procedure at Heathrow was in breach of the Department of Transport's requirement that hold baggage be reconciled with passengers. In these circumstances, Mr Gill submitted that I should make a finding under Section 16(1)(c) of the Act to the following effect: That the deaths might have been avoided had Pan American implemented a proper system of passenger/baggage reconciliation at Frankfurt and Heathrow and if they had not followed the practice of x-ray only of interline baggage at these stations and the practice at Heathrow of tarmac transfer of hold baggage without any security checks. He invited me to consider whether any of the background matters to which he had referred might be the subject of findings under Section 6(1)(e) of the Act.

In relation to the Department of Transport, Mr Gill submitted that I should consider making a finding under Section 6(1)(c) to the following effect: The deaths might have been avoided if (a) the Department had carried out an effective system of inspection of Pan America's operations at Heathrow; (b) the Department had enforced the security principles set out in its own circulars and directions; (3) the Department had stopped the practice of tarmac transfer of baggage between flights such as 103A and 103; and (d) the Department had taken effective action to enforce passenger/baggage reconciliation of all hold baggage on Heathrow-originating flights in response to the warnings they received in November and December 1988.

Finally, Mr Gill referred to the position of his clients in relation to the aftermath of the disaster and the future. He stated that he did not submit that any of the policy decisions taken as to the recovery of bodies, the access by relatives to those bodies, and the methods of identification to be applied were unreasonable per se. There was, however, a question as to whether they were effectively communicated and explained to those affected by them. For the future, he suggested that consideration might be given to the earliest possible establishment of lines of communication with the next of kin and to the appointment of a representative for all the relatives who would have official status. He should have the fullest access possible to available information and authority to disclose it to those relatives whom it concerned. Relatives should be spared having to deal with a multiplicity of officials, particularly in relation to the repeated requests for intimate details of the deceased. Further consideration should be given to the question of access to the bodies in the light of the recommendations of Professor Rosser.

Dr Swire, who appeared in the latter stages of the Inquiry on his own behalf, was mainly concerned with his regrets that certain matters had not been covered more fully. As I understood him, his main submission was that I should find that had the British Government given a reasonable degree of financial and scientific support to the development of technology in the field of aviation security, such techniques as back-scatter x-ray and CT scan could have been developed to such an extent that the explosive device which caused the disaster could have been discovered in December 1988 and the disaster could have been prevented. He relied on the evidence of Professor Wilkinson, who had challenged the evidence of Mr Doney, the scientific adviser to the aviation security branch of the Department of Transport, on this point. He criticised the continuing delay in the formulation by the Department of a structured programme of assessment of airline operators which, according to Professor Wilkinson might have exposed the deficiencies in security at Heathrow and led to improvements at Frankfurt. He criticised the delay on the part of the Department in obtaining copies of the colour photo-

graphs and suggested that photographs of the Toshiba device as it appeared under x-ray would have been of great assistance to screeners. He submitted that even if only black and white x-ray was available, screeners should have been able to detect the presence of the radio/cassette recorder which contained the device and it could have been set aside for further examination. In this way, the disaster could have been avoided. He asked me to consider (a) whether, in the light of the evidence of Professor Wilkinson and Mr Prescott, the Department of Transport was the appropriate agency to lead in the field of aviation security; and (b) whether there was merit in the suggestion of Captain Smith that an operator who delayed a flight for security reasons should not be penalised by further delay through being relegated to the end of the queue for take-off slots. Finally, he submitted that any plans for future emergencies should include the provision of expert advice for relatives in the field of post-traumatic disorders and pathological grief.

Mr Kavanagh, on behalf of the majority of bereaved relatives resident in the United States, also accepted the draft findings in terms of paragraphs (a) and (b) of Section 6(1) of the Act. He submitted that the baggage transferred from Flight 103A was to be regarded as online baggage under the ACSSP procedure and so was subject to passenger/baggage reconciliation and any unaccompanied bag was to be off-loaded and physically searched. Pan American had intentionally and wilfully discontinued this requirement for interline baggage although x-ray could not be relied on to detect a plastic explosive device in a radio/cassette recorder. He also submitted that the bag containing the device was unaccompanied and came from the feeder flight 103A. He further submitted that it probably came to Frankfurt as interline baggage. If the Frankfurt procedures for interline baggage were similar to those at Heathrow, Pan American and Alert violated Section 15C(1)(a) in relation to Flight 103A. By failing to reconcile bags and passengers at Heathrow, Pan American and Alert had breached the same provision in relation to Flight 103. A combination of these breaches had probably been a proximate cause of the deaths. He went on to submit that the alleged waiver had no part to play in this case for the reasons set out by Mr Gill.

He then said that Pan American's failure to reconcile passengers and baggage was highlighted by the fact that Flight 103 had been allowed to depart with Mr Basuta's bag on board, although he had not boarded the plane and the captain had not been informed. That had constituted a breach of the ACSSP and he was not prepared to follow the Crown and Mr Gill in accepting that this had not contributed to the occurrence of the accident and the deaths, or at least some of them. There was no positive evidence that the explosive device contained a barometric trigger. If it was controlled only by a timer, it may be that the delay caused by a search for Mr Basuta's bags would have resulted in the device exploding on the ground, or at a lower altitude than it did. The results might have been less disastrous than they were. He submitted that Pan American were also in breach of the United Kingdom requirements in the form of Circular 12/85 (Production 21/1) in relation to the Basuta bag.

In all other matters concerned with Pan American, he adopted the submissions of Mr Gill, although it was no part of his case to criticise the Department of Transport. He finally suggested that I might wish to consider recommending the suggestion of the Air Accidents Investigation Branch that a research programme into aircraft design be instituted should be adopted as a matter of urgency.

Mr Baird, who appeared for the mother of Khaled Jaafar, one of the victims, accepted the draft findings circulated but suggested a further fifteen findings in fact for my consideration and it is convenient to list them without comment at this stage.

- (6) The suitcase containing the IED was positioned on the second layer at the front of said container either on top of the flat bags or supported by such a bag in the angle of the container.
- (7) The arrangement of the baggage was not altered after it was placed in the container.
- (8) The suitcase containing the IED arrived on Flight 103A from Frankfurt.

- (9) It is a reasonable inference that the suitcase was interlined into Frankfurt and loaded on to Flight 103A there.
- (10) The suitcase was unaccompanied.
- (11) There was no evidence that Khaled Jaafar had any connection with that suitcase.
- (12) Khaled Jaafar originated as a passenger at Frankfurt. He checked in two bags, neither of which was the suitcase containing the device and neither of which contained any traces of illicit drugs.
- (13) The risks to aviation posed by the carriage of unaccompanied bags and the limitations of x-ray search were well known to Pan American and Alert.
- (14) In that knowledge, they took no proper precautions to prevent the passage of a potentially lethal suitcase and failed to meet the requirements of the regulatory bodies.
- (15) Any non-compliance with said requirements at Frankfurt meant that no procedures in place at Heathrow would have detected an unaccompanied bag.
- (16) There were serious inadequacies in record-keeping in that the operators did not know how many passengers, crew or bags were aboard Flight 103.
- (17) Alert failed to realise its aim of providing enhanced security because of poor staff and under-funding.
- (18) Pan American and Alert had no proper system of communicating security information.
- (19) Pan American and Alert had no proper system of internal monitoring of their own security performance.
- (20) The failure to follow security requirements in the case of Mr Basuta may have contributed to some of the deaths. If the trigger was a timer, the delay involved in unloading and searching his bags could have resulted in an explosion on the ground or at a lower altitude. The explosion occurred 38 minutes into the flight. In any event, the explosion might not have occurred over Lockerbie and the deaths of Lockerbie residents might have been avoided.

Mr Baird adopted Mr Gill's submissions as to the findings concerning Pan American but not those concerned with the Department of Transport. He submitted that a finding in terms of Section 6(1)(d) could be made that the abandonment of reconciliation in regard to interline baggage and the tarmac transfer of online baggage without a security check constituted a defect in a system of working which had contributed to the occurrence of the accident.

Ms Larracoechea, appearing for her brother-in-law who is the husband of one of the crew members who died in the disaster, said that she accepted the submissions made in the areas which had been addressed. Her concern was with other areas.

She suggested that for the future, planners for emergencies should aim to treat each relative as an individual and have regard to their personal needs in relation to (a) viewing the body (b) the exact location where the body was found and (c) the personal property of the victim.

She then suggested that where there was a general threat it was not possible to anticipate how a bomb might be placed aboard an aircraft. Security should have been stepped up in all areas. All warnings, however improbable, should be treated seriously. She submitted that in the case of a threat as specific as the Helsinki warning, Pan American had an obligation to inform the public and its employees.

She submitted that the evidence disclosed a failure to enforce their own regulations by the regulatory authorities. Airlines had been left to monitor their own performance.

She criticised the Department of Transport for lack of co-ordination, a relaxed attitude, a poor reaction to warnings, and a failure to respond to the suggestions of the Select Committee of the House of Commons. She suggested that there should be an independent agency for aviation security with the public sector involved in development and research and supported Dr Swire's submission as to the technology which was available in December 1988 and the need for

Government funding and direction of research. Regulations should set the standards for technology.

She was not prepared to accept the evidence as to where and how the bomb had been placed in the aircraft and submitted that it could have been substituted in the container when it was in the baggage build-up area. If so, it was necessary to look more closely at the role of Heathrow Airport.

Finally, she submitted that the Inquiry had been too limited in its consideration of (a) The role of international intelligence and its attitude in countering terrorism; (2) The assessment of the Helsinki threat; (3) The publication of threats to a privileged few and (4) The extent, if any, to which Pan American's bookings had been affected by publication of the Helsinki threat in the US Embassy at Moscow. There should be a further judicial inquiry into these matters.

Mr Anderson, for Pan American World Airways Inc and Alert Management Systems Ltd pointed out that the primary cause of the disaster was a terrorist act of murder and counter-terrorism was the task of governments rather than individual airlines. Only one aspect of Pan American's activities had come under scrutiny and there was no evidence that any other airline had done any better in that area. He submitted that I should make two findings under Section 6(1)(e) of the Act.

(1) In carrying out a policy of x-ray only in relation to interline baggage at Frankfurt and London, Pan American Airways were acting upon a waiver from the strict terms of Section 15C(1)(a) granted to them by the FAA.

(2) There was no breach of any direction or advice from the Department of Transport involved in carrying the suitcase containing the explosive device on Flight 103.

He further submitted that the court could not be satisfied on the evidence that the procedures operating at Frankfurt in relation to interline baggage prior to the introduction of the x-ray only policy would have detected the suitcase containing the bomb. He went on to deal with the relative position of Pan American and Alert and invited me to find that the actings of Alert played no part in causing the deaths.

Mr Anderson questioned my right to attach a Note to my determination, which was not in the same position as an interlocutor in an ordinary cause to which a Note must normally be appended in terms of Rule 89(1) of the Ordinary Court Rules. In any event, I was not entitled in a Note to deal with matters which did not fall under Section 6(1) of the Act.

He expressed himself content with the draft findings which had been circulated and would have no objection to the findings proposed by Mr Baird under numbers (6), (8), (10), (11) and (12). He might also be prepared to accept his proposed finding (7) in relation to the Samsonite suitcase, although he thought it was difficult to exclude the possibility of the bags in the container being rearranged. He agreed that there was no evidence that a bag had been inserted into the container while it was outside the office in the baggage build-up area.

He then referred in detail to the evidence relating to his proposed findings and his contention that it could not be assumed that Frankfurt procedures for interline bags before the x-ray only policy were similar to those at Heathrow.

With reference to the submissions made on behalf of the Crown and the bereaved relatives, he argued that it was not possible to say how the Samsonite case got into the Pan American system and it had not been proved that it arrived at Frankfurt as an interline bag. It would be inappropriate in the absence of very strong evidence to make a finding reflecting upon the security system of a foreign state. Secondly, he denied that the evidence showed that

passenger/baggage reconciliation was the only defence against the threat posed by an unaccompanied bag. Accordingly, the proposed findings (13) and (14) of Mr Baird should not be accepted. Nor should his proposed finding (15). There was nothing unreasonable in Pan American depending on bags being checked at their point of departure. He then rejected Mr Gill's sweeping criticism of Pan American's administration and procedures and Mr Baird's proposed finding (18) that they had no proper system for communicating security information. He submitted that aspects of the Alert programme which had been criticised had no relevance to the deaths and that Mr Baird's proposed findings (17) and (19) should be rejected. On the evidence, the decision to abandon reconciliation for interline baggage was a respectable option at the time. Again, the court should not be satisfied that the FAA bulletin regarding the Toshiba warning rendered any waiver irrelevant. It had not been specifically withdrawn. Reverting to reconciliation might have been a reasonable precaution at Heathrow but would not necessarily have been so at Frankfurt. He defended Pan American's reaction to the various warnings received and referred to the three alleged failures in security in relation to Flight 103 as peripheral. In particular, he did not accept Mr Baird's proposed finding (20) that any failure in relation to Mr Basuta might have contributed to any of the deaths.

Finally, Mr Anderson submitted that there was no evidence as to what might have been a reasonable precaution at Frankfurt which could have prevented the deaths and suggested that there should be a finding that after 21 December 1988 substantial changes were made in the regulations affecting airlines.

Mr Emslie, for the British Airport Authority, submitted that the disaster had not been caused or contributed to by any failure of the staff at Heathrow Airport. The evidence showed that there had been no interference or change in regard to the contents of the container when it was in the baggage area. Miss Larracochea had suggested the device may have been placed on board at Heathrow near the skin of the aircraft but the scientific evidence ruled this out. The crucial fact was that the IED came from Frankfurt on Flight 103A. There was ample evidence as to the competent way in which airport staff carried out security duties.

Mr McEachran, for the Department of Transport, accepted that the usual practice of sheriffs presiding over Fatal Accident Inquiries was to append a Note to the determination and to comment therein on matters which might not provide a basis for findings of fact under Section 6(1) of the Act. For example, he suggested I might wish to comment on the rehabilitation of Dr Fieldhouse, who had been severely criticised early in the Inquiry. He accepted the draft findings which had been circulated and Mr Baird's proposed findings (6), (7) and (8) which showed that the Samsonite suitcase arrived on Flight 103A from Frankfurt, but suggested that there was insufficient evidence to show that it had arrived there as interline baggage.

He then submitted that the tarmac transfer procedure at Heathrow would only have contravened the requirements of the Department, as applied by them, if there had been a "no show" passenger and his bag had been allowed to fly on Flight 103 by Pan American on the basis of the x-ray at Frankfurt, and that there should be a finding to that effect. The procedure carried out by Pan American and Alert at Heathrow were not relevant. It was reasonable to assume that as the transferred baggage came from another Pan American flight proper checks had been made at Frankfurt.

Mr McEachran cautioned me against finding or recommending that security should be handled in a particular way in the absence of evidence that that was the practice in a particular place and in particular circumstances. He accepted that the test for a finding in terms of Section 6(1)(c) was lower than that for a finding of negligence. It was enough that a precaution "might have prevented" the accident. But the precaution must be reasonable, tested on the evidence led as to the conditions at the time. Section 6(1)(d) required a higher test because the defect referred to must have contributed to the occurrence. Most of the matters raised in the Inquiry would be dealt with under Section 6(1)(e).

He then examined the position of the Department on 1 November 1988, in relation to Mr Gill's proposed finding as to the precautions which might have been taken by the Department. He submitted that there was no evidence that it would have been reasonable to have more inspectors in 1988, when the FAA did not inspect Pan American's operations at Heathrow more than once a year. There was no evidence that the presence of more inspectors would have picked up a breach of the Department's requirements which would only be committed and be apparent if there were a "no show" passenger which was a very rare occurrence. A Department inspection and a visit by FAA inspectors had failed to do so in 1988. The security principles set out by the Department were directed at the situation where there was a "no show" passenger, and they were monitored on that basis. The Department was entitled to rely on steps taken by the FAA to counter the threats particularly directed against US carriers and to allow the tarmac transfers to proceed on that basis. There was little practical difference between the situation involved in a tarmac transfer and that where passengers continued their journey in the same plane, when screening of baggage would be impracticable. He submitted that the Department's reaction to the Toshiba and Helsinki warnings was all that was required and that there was no evidence that reconciliation of all hold baggage was necessary. The precautions taken after the disaster did not include effective reconciliation so the Department had not considered this to be practicable.

In relation to the submissions for the Crown, Mr McEachran said that it was clear that the Department interpreted and applied its requirements as to reconciliation as being directed at a "no show" situation and there should be a finding to that effect. Accordingly, no question of a direction treating reconciliation on a different basis arose. If it was argued that the Department should have applied a stricter interpretation there was no evidence that that would have been reasonable in relation to all flights leaving Heathrow. If the court thought a physical match was a necessary precaution it should be discussed in a note rather than made a finding in the determination.

Mr McEachran then turned to matters in relation to which findings under Section 6(1)(e) had been suggested and said that the court might apply a broad interpretation to the phrase "relevant to the circumstances of the deaths". He accepted that passenger manifests should be as accurate as possible but there was no statutory obligation to have completely accurate manifests. The Basuta incident was, in his view, irrelevant to the circumstances of the disaster. The criticism of Alert employees had been overdone. Their training complied with the Department's requirements. In relation to the criticisms of the Department's failure to take a policing role it was interesting that the FAA were tending to rely more on encouragement and support in conjunction with enforcement.

Turning to the equipment position in December 1988, he suggested that a finding should be made in line with the evidence of Mr Doney at p4773 in preference to that of Professor Wilkinson. Finally, he commented on the evidence relating to whether the inspectorate should remain under the Department of Transport or be independent or attached to the Home Office.

In the light of these submissions, I considered my determination.

CAUSE OF THE DEATHS

In my view, despite the changes in emphasis in the 1976 Act compared with its predecessors, the main task of the presiding Sheriff in a Fatal Accident Inquiry is to determine the time and place of the death or deaths and their cause. The other matters in respect of which he is entitled to issue a determination are secondary. In this case, although the evidence on the central matters of the case was necessarily protracted, only Ms Larracochea suggested that she was not satisfied with the general thrust of my suggested findings. Accordingly, there was no difficulty in the end of the day in reaching the determination set out in the first five findings above. It was abundantly clear that the cause of all the deaths was the detonation of an

improvised explosive device which was in a particular luggage container situated in the forward cargo hold of the aircraft and the disintegration of the aircraft which followed. This resulted in the sustaining of multiple injuries by all the occupants of the aircraft and of multiple injuries and/or severe burning by those who died when the wing section of the aircraft crashed on to the Sherwood Crescent area of Lockerbie. The clear inference to be drawn from these findings is that the primary cause of the deaths was a criminal act of mass murder and I have made a finding to that effect.

I should point out that the evidence leading to my conclusions as to the cause of death was only made possible by the meticulous and systematic way in which the area in and around Lockerbie was searched by a dedicated group of people, including members of police forces, members of the Armed Forces, firemen, medical practitioners and other volunteers. This work was often of the most harrowing nature and the results were spectacular in that a substantial part of the fuselage of the aircraft and of the luggage container in which the explosive device had been detonated were re-assembled.

At this point, I feel obliged to make special mention of Dr David Fieldhouse who was subjected to some undeserved criticism at an early stage of the Inquiry. In brief, it was suggested that, although it had been decided that the finding by a doctor that life in a particular body was extinct should be made in the presence of corroborating police witnesses, he had gone out on his own and pronounced life extinct in a number of bodies, so rendering his finding lacking in the corroboration required by Scots law. In consequence, these bodies had to be re-examined for signs of life in the presence of witnesses at a later stage. It was also implied that he had left Lockerbie without telling anybody what he had been doing and that it had taken several months to extract information from him about his activities. Dr Fieldhouse himself gave evidence that in fact he had at all times been accompanied by police witnesses when he found life to be extinct; that he had reported verbally to a senior officer at about 7 pm on 22 December and showed him on a map where he had been working and told him how many bodies he had dealt with and what he had done about them. He arranged to meet a senior officer near Tundergarth Church on the morning of 23 December but although he waited there for over two hours, the appointment was not kept. He returned home to Bradford on 23 December and wrote a letter to the police at Lockerbie detailing his activities over the two previous days. It is clear that the information which he gave to the police verbally and in writing was overlooked. While that is understandable in all the circumstances obtaining at the time, it was very unfortunate that the criticisms to which I referred came to be made. It is worth recording that Dr Fieldhouse offered his services as a doctor and drove to Lockerbie, arriving at about 2250 hours on 21 December. He worked through the night in wind and rain searching for bodies and on until 1630 hours on 22 December without any stop for rest or any food, apart from a biscuit. During that time he pronounced life extinct in 58 bodies. I would record my thanks to Dr Fieldhouse and my apologies for the undeserved criticism of his activities.

PLACE OF DEATH

I have found that all the Lockerbie residents who were killed died at Lockerbie, but that the occupants of the aircraft died "at or near Lockerbie". This reflected the evidence that some of the victims whose bodies were found in Lockerbie may have sustained fatal injuries in mid-air.

TIME OF DEATH

I have timed all the deaths as "at or about 1905 hours on 21 December 1988". The evidence was to the effect that the detonation of the device took place at about 1903 hours and that parts of the wreckage landed on Lockerbie some 45 seconds later. I considered that "at or about 1905 hours" was a reasonably, accurate estimate of the time of all the deaths, taking into account the statement in the pathological report (No 169 of Process) that a body thrown from

the aircraft at about 31000 feet would have taken approximately two and a half minutes to reach the ground.

I have considered whether I should extend the period over which the deaths took place to reflect the possibility that two passengers might have survived for a short period after receiving the injuries from which they died, but have decided that I would not be justified in doing so. The statement in the pathological report was to this effect:

“Two passengers had injuries which were less severe than others and it is possible that they survived for a short time after sustaining these injuries.”

However, the pathologists were agreed that there was no evidence from the photographs which were taken of the bodies of these two passengers that there had been any voluntary or involuntary movement after their impact with the ground. Professor Busuttil took the view that if resuscitation had been available immediately, with access to hospital facilities there could have been long-term survival for these two passengers. Air Commodore Balfour said he thought it highly unlikely that these two people would have lived even if it had been possible to reach and treat them.

In this connection, I had regard to the fact that one witness spoke to having felt a pulse from the body of a young woman which she examined some five minutes after the nose section of the aircraft crashed at Tundergarth. After a close examination of this evidence, I am unable to accept that this victim was still alive at the time. It seems that another witness may have examined this body earlier and found no signs of life. Air Commodore Balfour indicated that the existence of a pulse did not mean that the person was alive “on any common-sense view”. I would only add that this victim was clearly not one of the two passengers referred to earlier. Accordingly I consider that all the victims died at or about 1905 hours on 21 December 1988.

THE NATURE OF THE EXPLOSIVE DEVICE

Without going into detail, the evidence from the report of the Air Accidents Investigation Branch (No 692 of Process) spoken to by Mr Charles, the principal inspector, and of an expert on explosives, made it clear that a specific type of Toshiba radio/cassette player had been adapted as an explosive device by packing a substance similar to Semtex inside it along with a detonating device. The cassette player would probably have appeared normal on external examination.

THE SITE OF THE EXPLOSIVE DEVICE

The results of the meticulous search carried out in the days following the disaster were such as to allow the Air Accident Investigation Branch to reconstruct the fuselage and from the nature of the damage to it, estimate the position within the hold occupied by the device. They were also able to identify parts of the suitcase in which it was contained. Mr Charles was quite clear in his evidence that there was no other baggage between that suitcase and the outer skin of the aircraft; that the device was 25 inches from the outer skin; and that it was some 10 inches above the floor of the container. The explosives expert considered that the suitcase was either laid on top of another suitcase which was lying flat on the floor of the container with one end of it overhanging it slightly or was fitted into the angled section of the container with one end resting partly on the suitcase which was on the floor of the container (Production 697).

The above matters relate to my findings in terms of paragraphs (a) and (b) of Section 6(1) of the Act and I now consider what findings might be made under the remaining paragraphs of that subsection.

FURTHER FINDINGS

I find it convenient to deal first with the detailed findings proposed by Mr Baird because these bring into focus some of the areas of controversy in the Inquiry. Findings (6), (7) and (8) were generally accepted by all those who made submissions but in my view the first two of these are only relevant to the circumstances of the deaths in so far as they provide a basis for finding (8) which is a crucial finding. Finding (10) is equally non-controversial. I have therefore considered the evidence, in relation to the proposed findings nos (8) and (10). The evidence of various loaders was to the effect that six or seven bags from the interline shed were put into the container there and that four or five of them were probably placed standing upright at the back of the container with two lying flat on the floor towards the front of it. The container was then taken to the departure area where it was left outside the office of Pan American Airways. At about 1745 hours the container was taken out to Pan American Flight 103A which had arrived from Frankfurt and baggage from that aircraft destined for New York was added to the bags already in the container until it was full. On all the evidence I consider it is probable that bags from flight 103A were placed on top of the two interline bags lying flat at the front of the container. It is, of course, possible that one of these interline bags was removed from the container and later replaced in the container on top of the bottom layer of bags but I consider this to be the less likely situation. I have also considered the possibility that the suitcase containing the device was put into the container while it was standing in the departure area but in view of the fact that the container was in full view of the Pan American office and also of British Airports Authority security office and in the light of the evidence of Mr Walker, the baggage supervisor, that he would have known if anybody had been interfering with the baggage and of Mr Sahota, I think this is highly unlikely.

I am therefore satisfied that the suitcase in which the explosive device was contained was among those transferred from Flight 103A to Flight 103. I am also satisfied on a balance of probabilities that it was not associated with any of the passengers who boarded Flight 103 at Heathrow. This decision is based upon the evidence of Detective Constable Henderson who analysed the baggage which was recovered and those pieces which were not recovered and where possible linked each piece with the person accompanying it. He gave evidence to the effect that none of the descriptions given by relatives of the baggage which they expected the victims to have been carrying fitted this suitcase. Although at one stage in cross examination he appeared to accept that the conclusion that the bag was unaccompanied was speculative, he later claimed that it was not speculative. There was some support for this conclusion from Sergeant Russell who said that none of the many keys found after the disaster bore the number corresponding to the lock of the suitcase which had contained the device. There was also the evidence that none of the clothes which the forensic scientists considered had been in the suitcase were identified as having belonged to any passenger. While bearing in mind the possibility that a passenger may have been deceived into checking in the suitcase as his own, I think I am entitled to take into account the improbability that a suitcase containing a concealed explosive device would be accompanied aboard the aircraft. As all the passengers due to transfer from Flight 103A to Flight 103 duly boarded the latter flight, it follows that the Samsonite suitcase was also unaccompanied on the flight from Frankfurt to Heathrow.

For all these reasons, I have felt able to make finding number (9) of my determination which combines findings number (8) and (10) as proposed by Mr Baird. I have come to the view that I should consider this part of my determination in the light of the submissions made by Mr Gill and Mr Anderson which seem to encompass those put forward by others.

WAS THE BOMB BAG INTERLINE AT FRANKFURT?

That brings us to the first main point of controversy in relation to Mr Baird's proposed findings. He proposes finding (9) to the effect that it is a reasonable inference from the evidence that the suitcase came to Frankfurt as an interline bag, ie that it was carried there on an aircraft of an

airline other than Pan American. This finding was also proposed by Mr Gill and Mr Kavanagh, but Mr Anderson and Mr McEachran both submitted that it had not been proved that the suitcase came to Frankfurt as an interline bag. The position of the Crown was that while it was not prepared to submit that such a finding should be made it would not seek to discourage it. It is therefore necessary to scrutinise the evidence on the point. Mr Gill argued that the evidence of Detective Constable Henderson established that the bomb bag had not been checked in at Frankfurt according to the documentation there and indeed had not been checked in anywhere in the Pan American system. Had the bag been treated as originating baggage or as an online bag it would have shown up in the documentation. In any event, had it been checked in by a passenger originating at Frankfurt or come in as an online bag it would have been identified as unaccompanied when the passenger failed to show and would have been offloaded. Only if it had come in as interline baggage would it have been allowed to fly in reliance on the x-ray screening. The evidence of Miss Milne showed that this would be one way of getting a piece of baggage into the Pan American system without checking in as a Pan American passenger. The incidence of explosive contact among Frankfurt interline bags as compared with bags originating at Frankfurt indicated that the bags nearest to the site of the explosion were loaded at Frankfurt as interline bags. This was sufficient to establish on a balance of probabilities that the suitcase in question came to Frankfurt as an interline bag. Mr Kavanagh also relied on the incidence of explosive contact in bags which had been loaded as interline bags at Frankfurt compared with bags originating there. Mr Baird referred to the evidence of the witness Fenlon as raising a reasonable inference that the suitcase had been interlined to Frankfurt and loaded on to Flight 103A there.

On the other hand, Mr Anderson accepted that the bag was not checked in by a passenger originating at Frankfurt but claimed that the evidence of Miss Milne did not warrant the conclusion that this meant that it must have been interlined in to Frankfurt. She said that whenever a through booking was made the particulars of the person booking baggage through would go into the Pan American computer and Pan American would have a record of the passenger and bags. This applied to all airports except a very few outlying ones. A bag would not enter the interline system unless an onward confirmed ticket had been issued. Other possibilities were that somebody with access to the interline system had inserted the bag or that the device had been inserted into a rush bag. In either case, the statistics as to explosive contact would be irrelevant. Mr McEachran contented himself with saying that I should rely only on the evidence led in deciding the matter and that this was insufficient to support the finding sought.

I have examined the evidence and although I do not think that that of Miss Milne goes as far as Mr Gill suggests, I consider that the probability is that had this suitcase been treated as originating as online baggage it would have been identified as being unaccompanied and offloaded at Frankfurt. Only if it had been interline would it have been allowed to fly unaccompanied. In that situation, I do not think that the possibility of its insertion into the interline system wholly negatives the effect of the explosives statistics, where there is no evidence as to how far such insertion would have been possible. In these circumstances, I am prepared to find that the Samsonite suitcase came into Frankfurt as an interline bag as set out in finding (10) of the determination.

I pass on to the findings (11) and (12) as proposed by Mr Baird. These are not opposed and are justified on the evidence and in view of the allegations made elsewhere in relation to Mr Jaafar, I consider that they are "relevant to the circumstances of the deaths" in terms of Section 6(1)(e). I have therefore combined them into one finding which forms finding (12) of the determination.

Proposed findings (13), (14), and (15) are more controversial. In the first place, they are stated in terms which amount to a finding of negligence on the part of Pan American. Mr Anderson denied that the evidence showed that passenger/baggage reconciliation was the only defence

against the threat posed by an unaccompanied bag and this was the whole basis of suggested findings (13) and (14). With regard to finding (15), he submitted that there was nothing unreasonable in Pan American's dependence on bags being properly checked at the point of departure of Flight 103A. These proposed findings are similar in their effect to (1) the submissions of the Crown that Pan American were in breach of Section 15C(1)(a) of the FAA regulations and also of the Department of Transport's requirements; (2) the submissions of Mr Gill that the deaths might have been avoided had Pan American carried out a proper system of reconciliation and if they had not followed the practice of x-ray only at Heathrow and Frankfurt and the policy of tarmac transfer at Heathrow without any security checks; (3) the submission of Mr Kavanagh that if the Frankfurt procedures for interline baggage were similar to those at Heathrow Pan American and Alert violated Section 15C (1)(a) in relation to Flight 103A and by failing to reconcile passengers and baggage at Heathrow they had breached the same provision in relation to Flight 103. I therefore propose to examine these matters as a whole. I must also take into account Mr Anderson's submissions (a) that Pan American carried out the x-ray only policy in reliance upon a waiver from the strict terms of Section 15C (1)(a) granted by the FAA; and (b) that carrying the suitcase containing the device on Flight 103 did not involve any breach of any direction or advice from the Department of Transport. The second of these submissions was supported by Mr McEachran.

I consider this part of my determination in the light of the detailed submissions made by Mr Gill and Mr Anderson which seem to encompass those put forward by others.

Holding, as I do, that it would be inappropriate to make findings implying negligence on the part of any particular person or organisation, I am not prepared to accept the submissions to the effect that I should find that Pan American were in breach of the requirements of either the FAA or of the Department of Transport. On the other hand, if one of the regulatory bodies required or recommended that a particular precaution should be taken, that goes some way to establishing that it was regarded as a reasonable precaution in terms of Section 6(1)(c) of the Act. Accordingly, the intention and effect of the ACSSP and any possible waiver and the directions and circulars of the Department must be examined from that point of view.

Mr Gill began his submission on this part of the case by listing nine risks which he claimed had been proved to be well known in the field of aviation security as at 21 December 1988.

It seems to me that the following are particularly relevant in this connection.

- (1) The use of explosive devices in airline baggage was a recognised technique of terrorism.
- (2) Frankfurt and Heathrow were regarded as specially vulnerable airports.
- (3) Unauthorised unaccompanied bags were a prime source of danger.
- (4) In the absence of passenger/baggage reconciliation there was no means of detecting the presence of an extra bag.
- (5) A policy of x-ray only of interline baggage was not a fully effective defence against the risks.
- (6) Interlining was the prime opportunity of introducing unaccompanied bags into an airline system.
- (7) The greatest risk was at airports like Frankfurt which had substantial interline baggage.
- (8) The tarmac transfer at Heathrow depended for the safety of the departing flight upon effectiveness of the check at Frankfurt on the baggage being transferred.

Against that background, he submitted that Pan American's decision to abandon passenger/baggage reconciliation in respect of interline baggage and baggage involved in the tarmac transfer was taken in disregard of the ACSSP, of the Department of Transport's requirements and of a key principle of airline security which was obvious and well understood. It was persisted in despite the warnings received prior to the disaster. He then made a sweeping attack on Pan American's security at Frankfurt and Heathrow, on its officers, on its administrative structures and its failure to disseminate crucial security information. He criticised the

evidence of Mr Berwick, Mr Tucker and Mr Sonesen as lacking candour and being evasive, and submitted that the evidence of Mr Wood and Mr Ford should be preferred in relation to the adequacy of Pan American's management. He then submitted that Pan American's priorities had been shown to be financial economy, punctuality and facilitation rather than security and that the adoption of an x-ray only policy for interline baggage was to avoid the dislocation caused if interline bags had to be offloaded. The Alert programme had never fulfilled its ambitious image because Pan American had withheld the necessary funds and support. The training of Alert personnel was inadequate and there were indications in the evidence that the staff at Frankfurt on the day of the disaster did not perform satisfactorily.

Mr Gill then expanded on his submissions that the policy of x-ray only of interline baggage was recognised as not being an effective safeguard against explosive devices and involving clear and obvious risks and was, in any event, in the absence of any waiver, a clear breach of Section 15C(1)(a) of the ACSSP at both Frankfurt and Heathrow. In relation to Heathrow he submitted that it was also in breach of the Department of Transport requirements as set out in the circular No 12 of 1985 (Production 21/1), the circular 4 of 1987 (Production 64) and the direction dated 18 September 1985 (Production 71).

Even if the policy did not breach any regulatory provision, the decision to adopt it was wilfully reckless and Mr Sonesen's persistence in enforcing it was wilful and perverse. The question he should have addressed was whether that policy was safe. Had he done so, he could have been in no doubt that x-ray only was anything but safe.

He then turned to the question of the alleged waiver and argued that there was virtually no evidence that the waiver was given. It was improbable that the FAA would, in the course of conversation at a meeting, have relaxed their requirements in respect of two airports where extraordinary security applied, and not have confirmed this in writing. In any event, any conversation about a waiver was not in the context of the application of Section 15 to extraordinary security airports. He further submitted that if x-ray only was a dangerous procedure the airline was not entitled to rely on any waiver, particularly after they received the FAA bulletin which demanded rigorous application of Section 15C(1)(a) and had sent out a task force wire to their own stations calling for compliance with existing FAA regulations.

Mr Gill then listed a series of warnings received by the airline between 1986 and December 1988, including the KPI Report (Production 17/1); the advice given at an FAA meeting in Brussels in October 1986 that Pan American were not complying with Section 15; Mr Berwick's communication in March 1985 (Production 100) and FAA bulletins in the period June to December 1988 intimating an increase in the threat of terrorist activity. He also referred to the report of an FAA inspection at Frankfurt in October 1988 (Production 7070). He submitted that there was some evidence to the effect that this report was adverse to Pan American and focussed on the problem of the treatment of interline baggage which, he claimed, was eventually to cause the disaster. He then turned to what was referred to throughout the Inquiry as the "Toshiba warnings" and, in particular, to Production 13/18 which is FAA bulletin 19 and Production 91, a circular from Heathrow Airport Ltd. These should have made it obvious to Pan American (a) that any indulgence extended to them in the past was no longer acceptable and (b) there was an immediate and urgent threat against which their x-ray only policy was not an adequate safeguard. Their response was quite inadequate and there was no material change in procedures even after Pan American's own task force wire (Production 17/2) called for a full review of security and compliance with Section 15C(1)(a). No information about the specific Toshiba device was passed to Alert screeners.

Turning to what became known as the Helsinki warning, Mr Gill said the first matter to be considered was whether it had any relevance at all. The evidence was not quite to the effect that it was a hoax. But even if it was, the warning had relevance as to what Pan American ought to have done about it. Everyone who had notice of that warning was given an opportunity

to make his own decision whether or not to fly with Pan American at the critical period. But in any event, Pan American were not entitled to rely upon it being a hoax. They should have assumed that it may have some substance and enhanced their security to the highest possible degree. In fact, Mr Berwick advised that special emphasis should be placed on interline baggage at Frankfurt. This put Mr Sonesen on notice, in his submission, that x-ray only was not an adequate response. Mr Berwick also advised that the warning was not a matter for Heathrow, but he should have appreciated that if a device was not detected at Frankfurt the tarmac transfer procedure meant that it would go through Heathrow without any further barrier. All that was done at Frankfurt was that a very small number of additional passengers were treated as selectees for screening.

Mr Gill then expanded on his submission that the tarmac transfer without any search at Heathrow was in breach of the Department of Transport regulations and was not authorised by the direction of 28 October 1987 (Production 66) which applied only to hand luggage.

He finally referred to three breaches of the regulations on 21 December 1988. He did so on the basis that they were not of direct relevance to the disaster, but indicated the state of Pan American's security at the time. These breaches were in relation to (1) the bag of Miss Nicola Hall which was carried on an earlier flight unaccompanied; (2) the bag of Mr Basuta, which travelled unaccompanied on Flight 103; and (3) the inaccuracies of the flight manifests which had been produced (Productions 47 and 141).

For Pan American and Alert, Mr Anderson pointed out that although there had been a great deal of sweeping and unjustified criticism of his clients, only one area of their operation had been subject to relevant criticism and that was the interline baggage procedures which they carried out. Scant regard had been given to the areas in which Pan American's security was better than most international airlines. They had carried out the Alert programme with diligence in a whole series of areas. There was no evidence to justify Mr Gill's description of everything that Pan American had done over the last five years as suspect or a sham. There had been no evidence of the practices of other airlines in these matters. He briefly submitted that the x-ray only policy decision was taken by Pan American and not by Alert. The actions of Alert played no relevant part in the circumstances of the deaths.

Mr Anderson then argued in favour of his proposed finding that in carrying out the x-ray only policy in relation to interline bags at Frankfurt and Heathrow, Pan American were acting on a waiver granted by the FAA. He suggested that I was entitled to hold on the uncontradicted evidence of Mr Sonesen that a verbal waiver was given by Mr Salazar at the meeting in Miami in October 1987. There was nothing improbable about the FAA relaxing their requirements at extraordinary security airports in this way. They had done so on three previous occasions and in another instance at that same meeting. Sonesen's recollection was clear as to what was being discussed at the meeting and that it included Section 15 and extraordinary security stations (Notes 5861F onwards: 5725C-D: 5726C-E:5734F). He had notified stations which were going to implement the procedure. Mr Berwick recalled seeing a memo to that effect from the Field Services Division. Sonesen's version fits with the state of the regulations at the time. There appeared to have been a change at some time during 1988 on the page of the ACSSO containing Section 15C (l)(a). Equipment was bought anticipating the relaxation. Pan American did not need relief from Section 8 because it already allowed x-ray. The FAA report on Frankfurt did not show concern about x-raying interline bags and the FAA had numerous opportunities of seeing that there was no reconciliation of interline bags. Yet no penalty in violation had been proposed (Notes 6012). Finally the granting of the waiver was in line with the FAA general policy anent screening. At the very least, Pan American were acting in the genuine belief that they had been granted a waiver.

Mr Anderson then submitted that the court could not be satisfied on the evidence that the procedures at Frankfurt for interline bags before the introduction of the x-ray only policy would

have detected the case containing the bomb. It had been assumed that passenger/bag match generally operated so as to attempt to stop an unaccompanied bag. But there was no evidence that the reconciliation carried out at Frankfurt before 1987/88 was similar to that then practised at Heathrow. Evidence suggested that airlines generally simply identified passengers and their bags in order to see that if a passenger checked in his bags he must fly, otherwise the bags would be unloaded. That was the thrust of all the UK regulations and requirements and the expectation of both the Department of Transport and the FAA. The whole airline passenger/bag reconciliation framework was not designed to detect the unaccompanied bag. It was necessary to have a passenger who failed to show up before you were alerted to the need to unload the bag. The only system which would have detected this bag was that operated at Heathrow prior to the x-ray only policy. It could not simply be inferred that Frankfurt would be the same as Heathrow.

He went on to submit that I should find that there was no breach of any of the Department's directions or advice involved in carrying the Samsonite suitcase on the flight. Mr Gill had submitted that they were in breach of the direction (Production 71) because in the absence of reconciliation they could never know if there was an intended passenger related to the bag. This was not correct. Transfer passengers were online so far as Heathrow was concerned. If one of them failed to reach the gate his bags would have to be unloaded. The direction was not breached by carrying an unaccompanied bag pure and simply; it was triggered by a no-show passenger. He conceded that there was a possible technical breach in the Heathrow interline procedures but as this was not an interline bag at Heathrow that would be irrelevant to the disaster. With regard to the circular (Production 21/1) it was only advice although it seemed to make a primary reference to the bag rather than to the passenger. But it should be interpreted as the author intended, ie calling for reconciliation by reference to the passenger. At the very worst, Pan American could be excused for disregarding the circular. With regard to the circular which formed Production 64, there was no breach at the tarmac transfer stage because there never was an intended passenger with which the Samsonite suitcase could be linked.

Having argued in support of his own proposed findings, Mr Anderson then turned to the propositions put by Mr Hardie, Mr Gill, Mr Baird and Mr Kavanagh. He did not accept the contention that passenger/bag reconciliation was accepted as the only defence against an unaccompanied bag or that the interline system afforded a notorious opportunity for the introduction of an unaccompanied bag. He therefore opposed Mr Baird's proposed findings Nos 13 and 14. In regard to Mr Gill's criticism of the tarmac transfer procedure he claimed that there was nothing unreasonable about depending upon a check of bags loaded at the point of departure. There was a reconciliation procedure in operation and the only new safeguard introduced since December 1988 was x-ray of the bags being transferred

He argued that the sweeping criticisms of Pan American and its structures were unsupported by the evidence, as was the suggestion that the decision to carry out x-ray only was made for financial reasons only. He rejected the suggestion that security at Heathrow and Frankfurt was incompetent. He submitted that there was no significant failure to disseminate information, even if it was rarely done in writing. There was a recognised procedure for dealing with task force wires, FAA bulletins and circulars from the Department. Accordingly, he opposed finding No 18 as proposed by Mr Baird.

Mr Anderson then dealt with the criticism of Mr Berwick, Mr Tucker and Mr Sonesen as witnesses and with the evidence of Mr Wood. He then submitted that the court should not hold it established that commercial considerations were Pan American's only priority at the expense of security. The evidence of Mr Jack and Mr Sonesen suggested that there was a valid security reason for the x-ray only policy.

In relation to the criticisms of the Alert programme, he repeated his submission that no action on the part of Alert had been relevant to the deaths. There was no specific evidence to suggest that funds and support were withheld by Pan American. There was no evidence that anybody at Heathrow or Frankfurt was not doing his job. The pay rates were higher than those in similar security companies.

He went on to submit that while it was now clear that it was better to combine x-ray with other security practices such as bag/passenger reconciliation, that was not universally accepted in 1988. He accepted that without the waiver the x-ray only policy appeared to breach Section 15C (1)(a) but the provision for an administrative match must involve starting with the passenger and matching the bag to him, which meant that the absence of the passenger would trigger the reconciliation process. This would leave the risk of an unaccompanied bag entering the aircraft unscreened. Mr Sonesen's position was quite respectable because such a bag was being screened by x-ray. The decision was not made wilfully or recklessly. It was made in good faith and at worst it was an error of judgment. The passenger/bag match was only abandoned in relation to interline baggage and the problem it solved was of unloading bags where an interline passenger failed to show at the gate, which was a comparatively rare event.

Mr Anderson rejected the proposition put by the Crown and by Mr Gill that even if a waiver had been granted, the terms of the FAA bulletin rendered it irrelevant. He submitted that Pan American acted reasonably in considering that they were in rigorous compliance with ACSSP as it affected them in the absence of a withdrawal of the waiver.

He then looked at the list of so-called warnings put forward by Mr Gill and submitted that most of these were irrelevant to the questions of reconciliation or x-ray of interline baggage. He accepted that Mr Berwick's reservations were relevant but they must be set in their proper context. In relation to the report of the FAA inspection at Frankfurt, he claimed that there was no evidence before the court as to its contents.

In relation to the Toshiba warning, he submitted that it was not possible to conclude that it was directly related to the circumstances of the deaths. The device which caused the disaster, although it was in a Toshiba radio cassette player, was not of the type described in the warning and there was no evidence that it had a barometric trigger. It was at least possible that to focus attention on a particular type of radio cassette might divert attention from other electrical equipment and that it was sufficient to ensure that all electrical devices were given attention and checked carefully. The failure to mention the name Toshiba did not relieve the screeners of that duty and Mr Berwick satisfied himself that they were performing it. Pan American had received production 17/3 which was the circular from the Hesse State Police which stated that no further official action was to be taken.

Mr Anderson submitted in relation to the Helsinki warning that the evidence was to the effect that it had no bearing on the bombing of Flight 103. Some measures were taken at Frankfurt and at Heathrow which, given the very specific nature of the threat, were proper and reasonable.

Finally, he submitted that the three matters referred to by Mr Gill as breaches of security in relation to Flight 103 were not a proper indication of Pan American's attitude to security.

These submissions raise substantial questions of fact which must be resolved before I can consider whether to make findings in terms of sub section (c) or (d) of Section 6(1) of the Act.

These include:

- (1) Was it generally accepted in 1988 that there was a real danger of an explosive device being concealed in a piece of baggage and loaded on to an aircraft?
- (2) Was it foreseen that such a bag was likely to be unaccompanied?

- (3) Was it foreseen that such a bag was likely to be introduced into the baggage system of a particular airline by being interlined at a particular airport from another airline and that the person so introducing it would not check in as a passenger at that airport?
- (4) Was positive passenger/baggage reconciliation recognised as the most effective security measure against the loading and carrying of an unaccompanied bag?
- (5) Was it generally appreciated in 1988 that the screening of bags by x-ray without other security measures such as passenger/baggage reconciliation had limitations as a defence against the carriage of unaccompanied bags containing explosive devices?
- (6) Did Section 15C (1)(a) of the ACSSP require reconciliation of interline baggage and passengers at Heathrow and Frankfurt?
- (7) Was a waiver granted to Pan American authorising them to substitute x-ray screening of interline baggage for such reconciliation?
- (8) If so, were Pan American entitled to rely upon that waiver as at 21 December 1988?
- (9) Did any direction or recommendation issued by the Department of Transport call for reconciliation of interline bags and passengers at Heathrow?
- (10) Did the procedure of the tarmac transfer of baggage from Flight 103A to Flight 103 at Heathrow involve a substantial risk that an unaccompanied bag containing an explosive device would be so transferred?
- (11) Did Section 15C (1)(a) of the ACSSP require reconciliation of the baggage so transferred at Heathrow with passengers?
- (12) Did any direction or recommendation of the Department of Transport call for such reconciliation?
- (13) Was a reasonable precaution available which might have detected the presence of the unaccompanied suitcase containing the explosive device and so have prevented the deaths?

I recognise that there are other matters of controversy raised by the submissions to which I have referred but I do not consider that they can be truly regarded as relevant to the circumstances of the deaths. Many of them relate to Pan American's general approach to security, to their reaction to warnings that there might be defects in their security procedures, to the quality of the staff of Alert, and to the methods of disseminating information to Pan American and Alert employees. I propose to comment on these matters in a general way before dealing with the specific questions set out above.

I have considerable sympathy with Mr Anderson's complaint that Pan American had been the subject of sweeping criticism of its corporate structure, its philosophy and its procedures on the basis of alleged defects in one small area of its operations, namely the security measures adopted in relation to interline baggage at Frankfurt and Heathrow and the tarmac transfer at Heathrow. Mr Gill pictured it as an ailing corporation in a state of continual financial crisis, with a chaotic administrative structure which led to a confusion of function and an organisation riven by factions. I am bound to say that the evidence before me related only to the security side of the corporation's activities and any strictures which were made could not have applied to the corporation as a whole. However I accept that Mr Gill referred to the evidence as relating to confusion between the roles of Pan American staff and employees of Alert at Heathrow. The more general criticisms of the corporation including confusion of function between departments, the rapid turnover of senior officers and the depiction of the corporation as an organisation riven by factions, seemed to depend upon the highly subjective assessments provided by Mr Wood, and I do not regard him as a witness who was qualified to pass judgment on the corporation as a whole. Nevertheless, the relationship between the Corporate Security Division of Pan American and Alert has, in my view, considerable importance as a background against which the arrangements for security at Heathrow and Frankfurt must be considered.

Prior to 1986, each station manager was empowered to enter into a contract with a local security firm to provide security cover for aircraft and passengers so as to comply with the requirements which the FAA laid down for US airlines. The procedures to be followed were dictated by the Corporate Security division of the Pan American headquarters in New York, and,

according to Mr Sonesen, who held the post of Systems Director of Corporate Security, they could instruct that a station could depart from the requirements of the FAA (Notes 5706 D-F). Prior to 1985, the FAA requirements had been directed mainly at the prevention of hijacking although the threat of explosive devices in baggage was appreciated and was increasingly evident. On 5 May 1986, Mr Frederick Ford, an official of Pan American World Services Incorporated which was, as I understand it, a separate company from Pan American World Airways under the umbrella of a body known as Pan American Corporation, was called to a meeting with the President and Vice President of Pan American Corporation. Concern was expressed at the low level of airline bookings for the summer of 1986, and the aim was to restore passenger confidence in the safety of travelling by air and particularly on Pan American Airways, by creating a security system which would "far exceed any system in operation by US airlines" and publicising it widely. It was decided to form a new subsidiary company of Pan American World Services, to be called Alert Management Systems Ltd (Alert), which would be funded by a \$5 surcharge on transatlantic flight tickets. Mr Ford was to be the president of the new company. He was empowered to contract with a firm called KPI whose members included Israeli nationals with experience in anti-terrorist activities, to prepare a report on the existing security system of Pan American and to make recommendations. Although this report was not expected until August 1986, Alert took over at JFK Airport, New York on 12 June 1986 and at Miami and Washington shortly thereafter. According to Mr Ford, the plan had three main objectives: (1) Improve the calibre of security staff; (2) Obtain the best detection equipment; and (3) Develop a dialogue within the intelligence community to keep a check on people who might threaten the airline.

I find it significant that the new company was to be a subsidiary of Pan American World Services and not of Pan American World Airways and that the Corporate Security division, which covers for aircraft and passengers so as to comply with the requirements which the FAA laid down for US airlines. The procedures to be followed were dictated by the Corporate Security division of the Pan American headquarters in New York, and, according to Mr Sonesen, who held the post of Systems Director of Corporate Security, they could instruct that a station could depart from the requirements of the FAA (Notes 5706 D-F). Prior to 1985, the FAA requirements had been directed mainly at the prevention of hijacking although the threat of explosive devices in baggage was appreciated and was increasingly evident. On 5 May 1986, Mr Frederick Ford, an official of Pan American World Services Incorporated which was, as I understand it, a separate company from Pan American World Airways under the umbrella of a body known as Pan American Corporation, was called to a meeting with the President and Vice President of Pan American Corporation. Concern was expressed at the low level of airline bookings for the summer of 1986, and the aim was to restore passenger confidence in the safety of travelling by air and particularly on Pan American Airways, by creating a security system which would "far exceed any system in operation by US airlines" and publicising it widely. It was decided to form a new subsidiary company of Pan American World Services, to be called Alert Management Systems Ltd (Alert), which would be funded by a \$5 surcharge on transatlantic flight tickets. Mr Ford was to be the president of the new company. He was empowered to contract with a firm called KPI whose members included Israeli nationals with experience in anti-terrorist activities, to prepare a report on the existing security system of Pan American and to make recommendations. Although this report was not expected until August 1986, Alert took over at JFK Airport, New York on 12 June 1986 and at Miami and Washington shortly thereafter. According to Mr Ford, the plan had three main objectives: (1) Improve the calibre of security staff; (2) Obtain the best detection equipment; and (3) Develop a dialogue within the intelligence community to keep a check on people who might threaten the airline.

I find it significant that the new company was to be a subsidiary of Pan American World Services and not of Pan American World Airways and that the Corporate Security division, which was then laying down security procedures, was not represented at the meeting on 5 May. It may also be significant that Mr Sonesen denied that restoration of public confidence was the overriding factor in setting up the Alert programme (Notes 5830E). In his view the purpose was

“to have one proprietary organisation which would have a consistent policy and standards and practices” (Notes 5694C). It is clear from the evidence of Mr Wood, who was to be responsible for the training of security staff, and of Mr Ford that although the original intention was to achieve a high standard of security by improving equipment and personnel, whatever the cost, once the KPI report had been received in August 1986, that intention was considerably diluted. Thus, at New York, 80% of the staff of the previous security contractor were employed by Alert after a refresher training course and the training programmes put forward by Mr Wood were severely cut in duration if not in content. Passenger bookings had picked up to some extent by August 1986 and Mr Ford was informed by the head of the Corporate Security Division that as long as the requirements of the FAA were being met nothing more was needed. The KPI report was circulated to some senior officers in the Pan American organisation but was never put before the board of directors for its consideration and the detailed criticisms of Pan American security procedures which it contained were not communicated to security personnel at the stations concerned. Mr Ford was removed from his post as president of Alert in August 1986.

Thereafter, the procedures followed at each airport continued to be laid down by Corporate Security without reference to the headquarters of Alert in New York. They passed instructions and security information relating to the airports through the Field Services Division of Pan American Airways to the principal ground security co-ordinator at each station. He had responsibility for their implementation and for compliance with the requirements of the FAA. It was for him to pass on to the local officials of Alert any instructions as to procedures to be followed and to check that they were obeyed. It was also for him to pass on to Alert such security information as he thought necessary for their operation. I found it difficult to understand Mr Sonesen’s contention that although Corporate Security laid down the procedures to be followed, they accepted no responsibility if it turned out that these procedures did not comply with FAA requirements. Indeed, as Mr Gill pointed out, station managers were not required to report back to Corporate Security any comments made by FAA inspectors following inspections at their stations. Mr Sonesen stated clearly (Notes 5756D) that Corporate Security treated the standards of the regulatory authorities as the maximum requirement rather than the minimum. During the year 1988, the principal Ground Security Co-ordinator at Heathrow was Mr Tucker, although in security matters he worked closely with Mr Berwick, who was Pan American’s security manager there and reported to Corporate Security direct. The Alert official at London with whom they were most in contact was Mr Davey, the project manager at Heathrow. Responsibility for training Alert security staff and for “auditing the system” lay with the regional station co-ordinator appointed by Pan American. At the material time, the regional station co-ordinator at Heathrow, according to Mr Sonesen, was Mr White, but Mr White did not seem to agree with this.

The x-ray equipment provided at Frankfurt and Heathrow in or about 1987 was probably among the most advanced types then in use, if one accepts the evidence of Mr Doney, the chief scientific officer of the aviation security division of the Department of Transport. Pan American were seeking to buy colour-enhanced television in December 1988 and this was installed at Frankfurt and Heathrow early in 1989.

It is against that background that I try to assess the validity of the criticisms of Pan American’s security system. In the first place, it is clear that the attempt to live up to claims made for the Alert system in the promotional advertising was soon abandoned, in so far as that involved setting up a system superior to any other US airline. On the other hand, there is no evidence to suggest that Pan American were any less security conscious than similar airlines because no evidence as to their practices was put before the inquiry. I therefore consider that it cannot be said that the Alert organisation was a sham. Although some witnesses were critical of the standard of Alert employees at Heathrow others, like Mr Berwick, said that the Alert security system was a great improvement on what had gone before and evidence of the low rates paid to Alert employees was coupled with evidence that they were higher than those prevailing

among other security companies. There was some suggestion that some of the Alert staff at Frankfurt had not received any of the training devised by Mr Wood but, to my mind, there was no relevant evidence to that effect. Passages from the report of the Presidential Commission (Production 693) were put to various witnesses but I do not recollect that any of them professed any knowledge of the matter. There was evidence that no records of training had been traced after December 1988 but that does not establish that there had been no training. Again, although Mr Wood referred to the Alert administration at Frankfurt as being "pretty low grade" most of the witnesses regarded the staff there as competent and acting as if they knew what they were doing. I am therefore not prepared to make a finding that the Alert staff at either Heathrow or Frankfurt was not reasonably competent as at 21 December 1988. Mr Ridd certainly found it necessary to discharge a small number of the Frankfurt staff early in 1989 but I do not think that would justify a general criticism of the Frankfurt staff as a whole, as is desiderated by Mr Baird in his suggested finding (17).

As to the claim that Pan American consistently put security second to commercial considerations and that the x-ray only policy in relation to interline baggage was an example of this, I am not prepared to hold that this has been established. Mr Sonesen gave his reasons for believing that x-ray of interline baggage was a sufficient security check, and although I do not accept them as valid, I am not prepared to say that he had regard only to commercial considerations in adopting it. On the other hand, the incident of Mr Basuta's bag seems to indicate that security was given a low priority among Pan American operational staff. The evidence of Mr Tucker made it clear that Mr Price, who allowed the aircraft to depart although Mr Basuta had not appeared at the gate, had observed similar action being taken by Pan American staff in the past, and had followed the same practice previously. I found it surprising that Mr Price did not appear to recognise consider that I can rely on the statements made by the Presidential Commission in its report (Production 693) in the absence of any direct evidence before me on the subject. Accordingly, I confine my examination of Pan American's reaction to warnings to the Toshiba and Helsinki warnings.

"TOSHIBA WARNING"

On 18 November 1988, the Federal Aviation Administration issued a bulletin in terms which are described in the Report of the Presidential Commission (Production 693) at page 7 and are referred to in Production 13/18. It contained a detailed description of a Toshiba radio cassette player which had been discovered in the automobile of a member of the Popular Front for the Liberation of Palestine - General Command. This cassette player had been fully rigged as a bomb and equipped with a barometric triggering device. The bulletin cautioned that the device would be very difficult to detect via normal x-ray inspection, indicating that it might be intended to pass undiscovered through areas subject to extensive security controls, such as airports. It went on to state that the passenger/checked baggage match should be rigorously applied by all US airlines with international operations.

I found the evidence as to which employees of Pan American in London received this bulletin confusing. Mr Berwick, who was their security manager based at Heathrow, was quite clear that he received a copy of it (Notes 3225B). On the other hand, Mr Tucker, who was at that time their primary ground security co-ordinator, said that he and Mr Berwick both received information about a radio cassette bomb warning in a telex from Pan American headquarters in New York (Notes 3577D). But Mr Tucker (at 3725B) said that the telex he saw was a different document from Production 17/2 of Process, which is a wire sent out by a task force from the Corporate Security Section at Pan American headquarters in New York. Mr Sonesen could not recall any other document being sent from Corporate Security in relation to the radio cassette bomb warning (Notes 5912B). In these circumstances, I have come to the conclusion that the document sent to Mr Tucker and Mr Berwick was probably the FAA bulletin which contained more information than the task force wire. In particular, it specified the type of radio cassette involved, indicated that it contained plastic explosive and, perhaps more importantly,

warned that the device would be very difficult to detect by normal x-ray inspection. The task force wire omitted these facts for reasons which Mr Sonesen attempted to explain in his evidence. I think it is clear from Mr Berwick's evidence that he was aware of them from an early stage and that must have been because he had seen the FAA bulletin.

I heard a great deal of evidence as to the action taken following upon the receipt of this bulletin. Mr Berwick said (at p3225C)

"I would automatically give a copy of the bulletin to Alert I cannot recall if it was Mr Davey of Alert but from my recollection I can say that I am aware that there was a knowledge by the staff of the Toshiba cassette warning or a knowledge not necessarily so much of Toshiba but it was expanded to say cassette radio players in general."

He could not recall if the bulletin contained any description of the radio cassette player other than to say that it was a Toshiba. He could not recollect whether he had communicated the bulletin to Mr Davey or someone else in the Alert organisation. He was satisfied that he had done so because he was aware that the Alert staff were later checking radio cassette players and other electronic items. He would not be surprised if security operators had not been told specifically that there had been an FAA bulletin relating to a Toshiba. His discussion with Mr Davey might have been about radio cassettes in general terms rather than just about a Toshiba. Mr Berwick had also received a copy of a circular from Heathrow Airport Ltd dated 22 November 1988 (Production 91) which he passed to various people, including the Alert organisation. This circular related to a Toshiba radio. He could not understand how the Alert personnel involved in x-raying and searching baggage prior to 21 December 1988 could have been unaware of the Toshiba radio cassette bomb threat. He did not instruct any special measures to be taken in respect of the Toshiba warning (3254C). He could not explain why he did not do so (3244D). In cross-examination he appeared to suggest (at p3375B) "We were to be in a heightened posture in respect of any persons who were found to be in possession of a radio cassette recorder". With the passengers (Notes 3391E). In London he told Mr Tucker about the warning but said he did not consider that it related to Heathrow. In the meantime, the FAA issued a bulletin addressed inter alia to a number of United States' embassies relating to this telephone call (Production 70). The bulletin was specifically sent for limited circulation to airport and airline security staff only but its contents were made known to staff of the United States embassy in Moscow. Mr Berwick said in evidence that he was informed on 15 December that the UK authorities attached little credibility to the warning but this evidence appeared to be directly contradicted by Mr Jack who attended the same meeting and I am not prepared to accept it.

The measures taken by Pan American in response to this warning were (1) Mr Sonesen instructed that interline bags from Helsinki should be intercepted at Frankfurt and those belonging to Finnish female passengers and any persons accompanying them should be examined. (2) Mr Berwick gave evidence that he instructed that at London all unaccompanied female passengers should be given special attention by security staff. He said that he had mentioned the telephone warning in discussion with Mr Davey of Alert. Mr Davey, on the other hand, was quite clear that he knew nothing about the Helsinki warning until after 21 December. He said nothing in his evidence about any instruction to search unaccompanied females. His assistant, Mr Jackson, and Mr Sullivan, a supervisor employed by Alert, both said they knew of no instruction to pay particular attention to unaccompanied females. Mr Jones, a security officer in Mr Berwick's department, thought that the instruction was to give special attention to Scandinavian females travelling alone (Notes 2595C). I have considerable doubt as to whether Mr Berwick passed on any information or instructions to Alert as a result of this warning.

There was no evidence before me to suggest that this warning should have been treated as credible at any stage. I have had due regard to Mr Gill's submission that Pan American should have assumed it to have some substance and enhanced their security generally at Heathrow as well as at Frankfurt. But if the warning was to be accorded credibility because of its very

specific nature, it seems to me that precautions aimed at the specified danger should be taken. I consider that the limited measures taken at Frankfurt were sufficient in all the circumstances, providing as they did for special attention to the baggage of Finnish ladies and their companions, even if it were interline baggage.

Finally, I should say that I am not convinced that Pan American and Alert had no proper system of communicating security information. A system depending on written communication is not always suitable in the realm of security and the evidence showed that there were clearly defined channels of communication, both to Mr Berwick and to Mr Tucker, their security executives at Heathrow. It was also clear that information was passed on to Alert officials such as Mr Davey at the discretion of Mr Berwick or Mr Tucker. Whether the system was used to the full is a different matter. There is no evidence that information which reached Alert was not passed on to its employees whenever necessary. In these circumstances, I am not prepared to accept Mr Baird's proposed finding (18).

I now turn to the specific questions listed earlier.

(1) I have no doubt on all the evidence that by 1988 the use of explosive devices in airline baggage was a recognised threat and that precautions were necessary to combat it.

(2) Although Mr Gill referred only to the evidence of Professor Wilkinson in support of his contention that an unauthorised unaccompanied bag was recognised as a prime source of danger in this connection, I am fully satisfied that this was implicit in the evidence of many of the witnesses.

(3) I have no doubt on the evidence of Mr Jack, Professor Wilkinson and Mr Berwick that it was well recognised that a serious area of risk was that of an interline passenger checking his bag through from its originating station but leaving the flight at the interline station without checking in at the desk of the airline concerned. Mr Anderson appeared to accept this but was concerned with the submission that passenger/baggage reconciliation was the main defence against the risk, which is the subject of the next question. It seems obvious to me that a person wishing to introduce an explosive device hidden in a piece of baggage into the interline system of a particular airline would not wish to draw attention to that bag by failing to show at the gate after checking in.

(4) Was positive passenger/baggage reconciliation recognised as the most effective precaution against an unaccompanied bag being loaded on to an aircraft and carried?

Having considered the evidence relied upon by Mr Gill in support of his submission on this point and Mr Anderson's comments in reply, I am satisfied that passenger/baggage reconciliation was regarded as an important element in dealing with an unaccompanied bag. Professor Wilkinson described it as of crucial importance, particularly in relation to interline bags. Mr Sonesen agreed that reconciliation was a cornerstone of aviation security. Mr Jones and Mr White agreed that a physical search of an unaccompanied bag was the most effective counter to the threat of an explosive device, but I agree with Mr Gill that in order to carry out a physical search an unaccompanied bag must first be identified through a positive passenger/baggage reconciliation. On the other hand, I agree with Mr Anderson that the passage in Mr Jack's evidence relied upon by Mr Gill does not seem to deal directly with this point. He is discussing the practicability of one suggested method of reconciliation, namely the counting of bags. I have made finding (14) to the effect that positive passenger/baggage reconciliation was recognised as an important element in any system designed to prevent the carriage of an unaccompanied bag on an aircraft.

(5) Were the limitations of x-ray screening as a method of preventing the carriage of an explosive device in an unaccompanied bag well known to the aviation security world and, in particular, to Pan American?

In support of his proposed finding on this matter, Mr Baird referred to the evidence of Mr Feraday, to the effect that the device which destroyed Flight 103 would have required an expert operator to detect it on x-ray; to the warning contained in the FAA bulletin; to the opinions of Mr Jones and Mr Berwick; to the opinion of Mr White; and to the evidence relating to the reference to the limitations of x-ray in the Alert training programme.

Mr Gill claimed that every witness at the Inquiry who had been competent to express a view had condemned the x-ray only policy and referred specifically to Mr Berwick, Mr Doney, and Mr Wood.

Mr Anderson relied to some extent on the evidence of Mr White when he accepted that there was a reasonable school of thought which took a different view from his own as to the value of x-ray screening. He also claimed that Mr Jack's evidence accepted screening as a principal line of defence. In these circumstances, it should be accepted that Mr Sonesen's reasons for adopting the policy were perfectly valid.

I have had regard to the passages of evidence referred to and have come to the conclusion that there were good grounds by at least March 1988 for doubting the efficiency of x-ray alone as a means of detecting explosive devices and that by the date of the disaster, these doubts should have intensified. I do not regard the passage in Mr Jack's evidence, founded on by Mr Anderson, as indicating an acceptance of x-ray alone as an effective procedure. I consider that his attitude is more clearly shown by his concerned reaction to the suggestion that the FAA intended to allow x-ray screening as in some measure replacing reconciliation procedure. I also had regard to the fact that Mr Jack ordered an inspection at Heathrow for the specific purpose of monitoring the reconciliation procedures there. I am not impressed by Mr Sonesen's judgment in the matter when he appears to have given no consideration to the doubts expressed by Mr Berwick in his message (Production 100). For these reasons, I have made finding (15).

(6) Did Section 15C (1)(a) of the ACSSP require positive reconciliation of interline baggage and passengers at Heathrow and Frankfurt?

One of the difficulties under which the Inquiry operated was a "confidential order" issued by the judge hearing a civil action in the United States covering various productions in that case and uncertainty as to which documents were so covered by it as to prevent their production at the Inquiry. In consequence a copy of the relevant parts of the ACSSP was made available only on the forty-sixth day of the hearing. Prior to that date, witnesses were questioned on the basis of a short paraphrase of Section 15C (1)(a) contained in the Report of the Presidential Commission (Production 693) at page 19 which stated that the subsection required carriers to "conduct a positive passenger/checked baggage match resulting in physical inspection or non-carriage of all unaccompanied bags". The full text of Section 15C (1)(a), as contained in Production 27/1 is: "conduct a positive passenger/checked baggage match resulting in physical inspection or non-carriage of all unaccompanied bags. The carrier may use either physical match or administrative match but in either case. it should be done in a way that passengers are aware of the use of the procedures."

Mr Anderson accepted that without the waiver on which he relied the x-ray only policy appeared to breach the subsection but he argued that the provision for an administrative match must involve starting with the passenger and matching the bag to him. The reconciliation process would be triggered by the absence of a passenger. I am not prepared to accept this argument. I consider that the word "positive" indicates a match of passenger and baggage either by bringing them together physically or by ascertaining administratively that both have been checked in with the carrier at the airport concerned. The absence of the passenger would constitute, to my mind, a negative reconciliation. Accordingly, to allow a bag to be loaded

before ascertaining that the corresponding passenger has checked in at the desk does not meet the requirement for a positive passenger/baggage match. The fact that such a requirement was made indicates, to my mind, that it was regarded as a reasonable precaution.

(7) Was a waiver granted to Pan American authorising them to substitute x-ray screening of interline baggage for such reconciliation?

The officials of Pan American who gave evidence in relation to the abandonment of any reconciliation of interline passengers and baggage at Heathrow and Frankfurt justified it on the basis that this requirement, which they accepted had been imposed on those airports among others by Section 15C(1)(a) of the ACSSP, had been specifically waived so far as Pan American World Airways was concerned by Mr Salazar, then the Director of the FAA. It is necessary therefore to consider (1) whether Mr Salazar granted any such waiver and (2) if he did, whether that waiver related to the need for reconciliation of passengers and baggage or only to the procedure to be followed once the reconciliation procedures had disclosed the presence of an unaccompanied bag.

The key witness on this matter was Mr Sonesen, who claimed that he persuaded Mr Salazar to grant the waiver at a meeting of the security committee of the Air Transport Association at Miami in October 1987.

Mr Anderson, as I have indicated above, argued that Mr Sonesen had been clear in his recollection that the discussion at the meeting included Section 15 and the extraordinary security stations and founded on the fact that the FAA had not shown any concern about x-raying interline baggage at Frankfurt in 1988 although they had opportunities of seeing that there was no reconciliation of such bags. The FAA had granted waivers in relation to extraordinary security airports in the past, in a similar manner. He argued that I should accept Mr Sonesen's uncontradicted evidence in the matter.

I found Mr Sonesen's evidence on this matter somewhat involved, but I think it is clear (a) that any waiver was being discussed in anticipation of the coming into force of a provision of Annexe 17, an agreement of the International Civil Aviation Organisation (Production 86). (Notes 5860); (b) Mr Salazar indicated an intention to grant relief in some form;

(c) there was no later communication from the FAA to Pan American granting the relief or indicating the exact form it was to take. Section 8 of the ACSSP, which appears to have been the form in which the FAA performed the obligation of the United States under Section 5.1.4 of that Annexe does allow for x-raying of baggage instead of physical search in certain circumstances and this may have been the form which the waiver took. But Section 8 specifically provides that at stations such as Heathrow and Frankfurt the requirements of Section 15 must be observed in addition to those of Section 8. In these circumstances, I am not prepared to hold that any waiver was granted to Pan American which would have allowed them to depart from the provisions of Section 15 C(1)(a) which required passenger/baggage reconciliation. In any event¹ I have come to the view that any indication from Mr Salazar as to the form of relief which he was considering related to the method of dealing with identified unaccompanied bags rather than to waiving the reconciliation requirement. Mr Sonesen said (Notes 5722D) that the FAA knew that they were deviating from the proper practice of physically searching the bags. He did not say that it was known that Pan American had dropped the reconciliation procedure. Again, according to Mr Sonesen, Mr Salazar said that x-ray would be accepted as an alternative to allow the bag to fly. To my mind, that is a clear indication that he envisaged a situation where an unaccompanied bag had been identified by the reconciliation process. In his message to Mr Berwick explaining the situation (Production No 101) Mr Sonesen specifically said that Mr Salazar "has granted x-ray as an alternative to searching passenger baggage". That clearly relates to the situation where an unaccompanied bag has been identified. Again, at p5862E, Mr Sonesen said that Mr Salazar said he would accept the

practice of x-raying “as a means of interrogating the bag at stations of extraordinary security”. Once again, that seems to me to address the situation where an unaccompanied bag has been identified. I have given due regard to the evidence of Mr Jack, who said that his understanding was that the FAA contemplated that baggage might be subjected to security controls “and that would have been instead, to some degree, of the need to reconcile”. Mr Jack said that he caused representations to be made to the FAA that screening hold baggage or subjecting it to security control did not relieve US carriers in the United Kingdom from fulfilling the directions requiring a check that passengers had boarded the aircraft (Notes 4599-4600). At the end of 1987, he received an indication that the FAA had purported to relax the reconciliation requirement, where baggage was subject to security controls. He was assured by Mr Salazar that where host state requirements were spelled out they were “paramount” to FAA requirements (Notes pp 4677-4681). I do not think that this evidence of Mr Jack renders it probable that in the end of the day Mr Salazar did grant a waiver dispensing with the reconciliation requirements so far as Pan American operations at Heathrow were concerned.

In all the circumstances, I am not prepared to make the finding sought by Mr Anderson to the effect that such a waiver was granted.

(8) If such a waiver was granted, were Pan American entitled to rely on it as at 21 December 1988?

In view of my answer to the previous question, I do not require to answer this one, but I consider that in view of the terms of the FAA bulletin (Production 17/2), Pan American were no longer entitled, if they ever had been, to feel that x-ray screening of interline baggage was a sufficient precaution against the carriage of an explosive device in an interline bag.

(9) Did any direction or recommendation of the Department of Transport call for reconciliation of interline bags and passengers at Heathrow?

The documents which appear to be relevant to this question are, in chronological order, a direction under the Aviation Security Act 1982 issued on 18 September 1985 to be effective from 30 September 1985 (Production 71); Security Advice Circular 12/85 issued on 20 November 1985 (Production 21/1); and Security Advice Circular 4/87 (Production 64). Production 71 directed that: “before any aircraft of which he is the operator flies. the operator shall make such checks as are necessary to ensure that any intended passenger whose baggage has been placed in the hold of an aircraft on which he is to depart has boarded that aircraft and shall remove from the aircraft the baggage of any such passenger who has not boarded that aircraft unless he is satisfied that the failure to do so will not give rise to an act of violence against the aircraft or persons or property on board the aircraft.”

Production 21/1 stated in its introduction that it contained “additional security measures in respect of interline and rush baggage” which complemented procedures recommended inter alia in Production 71. It recommended that: (a) When interline baggage is to be conveyed on board an aircraft a check should be made to ensure that the passenger to whom it belongs subsequently boards the aircraft. Discrepancies should be resolved to the satisfaction of the aircraft captain before the aircraft takes off. and (b) Interline baggage which belongs to a passenger who has chosen to fly on another flight should be subject to security screening before being placed on board the aircraft.

Production 64 appears to have been a consolidating circular and superseded earlier specified circulars, but not Production 21/1. Paragraph 13(a) is in similar terms to the Direction (Production 71) except that it provides at the end: “Discrepancies should be reported to the aircraft captain. Baggage which has become separated from its owner need not become an object of suspicion requiring specific handling”.

Production 64 does not include any particular provision in relation to interline baggage similar to that contained in Production 21/1.

It was accepted by Mr Jack and Mr Harris that all these documents required some form of reconciliation of interline passengers and baggage. However, the provisions of Productions 71 and 64 would be met by what I have described above as a negative reconciliation, ie that the failure of an intending passenger to board the aircraft would trigger off the prescribed procedures. On the other hand, the terms of Section 21/1 appeared to require a positive reconciliation in that it concentrated upon the bag rather than on the passenger. Be that as it may, I am satisfied that each of these documents did require some form of reconciliation in relation to interline baggage at Heathrow.

However, it is clear that the bag which contained the explosive device on 21 December 1988 was not an interline bag at Heathrow and accordingly, it is irrelevant to the circumstances of the deaths that the procedures there may have breached the requirements of the Department. The existence of these requirements might have reinforced the indications to Pan American that they represented reasonable precautions which they could have taken at Heathrow and, by inference, at Frankfurt, but I am not prepared to make any finding to that effect.

(10) Did the Procedure of the tarmac transfer of baggage from Flight 103A to Flight 103 at Heathrow involve a substantial risk that an unaccompanied bag containing an explosive device would be so transferred?

In his proposed finding (15) Mr Baird suggested that any non-compliance with the requirements of the regulatory bodies at Frankfurt meant that no procedures in place at Heathrow would have detected an unaccompanied bag. If, therefore, Frankfurt was carrying out the x-ray only policy in relation to interline bags, which would not detect an extra unaccompanied bag, the absence of any further check during the tarmac transfer involved a substantial risk. Mr Gill submitted that there was an obvious risk involved where the tarmac transfer procedure was such that the safety of the departing flight depended upon the effectiveness of the check at Frankfurt on the baggage which was transferred. Mr Anderson claimed that there was nothing unreasonable in depending on a check at Frankfurt although the assessment must depend on one's knowledge of the procedures carried out there. Mr McEachran argued that it was reasonable for Pan American to assume that as the transferred baggage came from one of their own flights proper checks had been made at Frankfurt.

I consider this question against the background that the x-ray only policy in relation to interline baggage was probably in operation at Frankfurt. As that policy would not have disclosed the presence of a bag booked through from another airport by a passenger who had not checked in with Pan American at Frankfurt it seems clear to me that such a bag would not be detected at Heathrow. Such a passenger would not be a "no show" passenger. As I indicated in my answer to Question (3) above, this situation created an obvious danger that an unaccompanied bag carrying an explosive device could pass on to Flight 103 undetected and I have made finding (16) to that effect.

(11) Did Section 15C(1)(a) require positive reconciliation at Heathrow of baggage involved in a tarmac transfer with passengers?

Section 15C(1)(a) applies to "all passenger flights from those airports located in the countries designated". Flight 103 from Heathrow was such a flight and I cannot see that baggage from the feeder flight should be exempt from the positive passenger/checked baggage match required to identify unaccompanied bags. This is therefore an indication that a positive match of baggage involved in such a transfer was regarded as a reasonable precaution. I take Mr Anderson's points that the requirements laid down after 21 December 1988 called only for x-ray screening of the bags and that a form of negative reconciliation was already in place, but that

does not to my mind alter the fact that the FAA appears to have considered, at the material time, that a positive reconciliation was a reasonable precaution.

(12) Did any direction or recommendation of the Department of transport call for such reconciliation?

Mr Hardie submitted that Production 21/1 recommended reconciliation. Its definition of "interline baggage" included on-line transfers between aircraft operated by the same airline. The recommendation was that one should effect a reconciliation between baggage which is to be conveyed on board the aircraft and passengers who board the aircraft. This was advice to operators of airlines, including Pan American. Mr Gill submitted that the tarmac transfer procedure was in direct disregard of Productions 71, 21/1 and 64. Productions 65 and 66 were directives which applied only to hand luggage of passengers involved in certain transfers.

Mr Anderson, as noted above, claimed that the direction (No 71 of process) was not breached by carrying an unaccompanied bag. The procedures were triggered by a no-show passenger. Production 21/1 had been intended to have a similar effect and, in any event, was only advisory. Mr McEachran took a similar position and asked for a finding that the Department's requirements would only have been breached if there had been a "no-show" passenger and his bag had been allowed to fly in reliance on the x-ray at Frankfurt.

As I have indicated, I am not prepared to make findings as to whether or not Pan American were in breach of the Department's requirements. I look at those requirements solely for the purpose of assessing whether they indicate reasonable precautions which might have been taken. It is clear on the evidence that if Production 21/1 indicates a need for a positive reconciliation that was not the intention of the draftsman and airline operators were not required to comply with it. In that situation, I am not prepared to hold that the Department considered that a positive reconciliation of bags involved in the tarmac transfer was a reasonable precaution in all the circumstances.

(13) Were reasonable precautions available which might have detected the presence of the unaccompanied suitcase containing the explosive device and so have prevented the accident?

I must deal with this question in the light of the answers arrived at above and I do so first in relation to the treatment of interline baggage at Frankfurt.

As there was very little evidence as to the procedures at Frankfurt apart from Mr Sonesen's evidence as to the instructions issued by Corporate Security, I find it convenient to look at the history of the treatment of interline bags at Heathrow.

The system for dealing with interline baggage, ie bags being transferred at Heathrow to a Pan American flight from a flight of another airline, has changed from time to time, but I found the evidence as to the precise nature of the changes and the timing of them somewhat confusing.

Prior to 1987, there was a reconciliation of interline bags and passengers. According to Mr Berwick (Notes 3456D-F) and Mr Tucker (Notes 3628 onwards and 3698 onwards) bags were taken from the interline area to the boarding gate where they were identified and matched through the baggage tags with the owners who had checked in before being loaded on to the aircraft. This procedure had been in place for a long time. When Alert started their operations on behalf of Pan American at Heathrow in January or February 1987, they x-rayed all interline baggage, according to Mr Jackson (Notes 3975C and 4001A). I find it unclear on the evidence whether the baggage reconciliation check was discontinued at that time. It is, however, clear from the evidence of Mr Tucker that while interline passengers were matched with their baggage before the x-ray machines were in place, the procedures were changed "shortly after the x-ray equipment was introduced" (Notes 3572D-F;3575A). This was as a result of a

decision taken by Corporate Security in New York. Mr Berwick agreed that an instruction from Pan Am headquarters probably some time during 1987 allowed the bags of a no-show passenger to travel in certain circumstances (Notes 3248A-D: 3282D-E). Mr Sonesen made it clear that bags were already being x-rayed before the Air Transport Association security meeting in October 1987 and that he considered this to be an appropriate substitute for the passenger/baggage reconciliation (5734E - 5735E: 5879C) in relation to interline baggage. The decision was made by Pan American security task force. He thought the decision was taken in 1987. It is quite clear that whether or not a waiver in relation to interline baggage was granted by the FAA, Pan American had in fact departed from compliance with Section 15 of the Air Carriers' Standard Security Programme before any waiver was granted and that the new procedure continued in force until 21 December 1988 at Heathrow and probably at Frankfurt.

It seems clear that the Department of Transport was never aware that there was no reconciliation of interline bags and passengers. This was the evidence of Mr Jack and that is supported by the terms of the report of one of the Department's inspectors after a visit to a number of airlines including Pan American at Heathrow in March 1988. In the section of his report (No 706 of Process), dealing with Pan American the inspector refers to transfer passengers which, to my mind, must include interline passengers and states:

"When a transfer passenger received his boarding card at the transfer desk details of checked-in baggage are fed into the main computer and also separately notified to the baggage make up area. All transfer bags are held in the baggage make-up area until confirmation is received that the owner is in the departure lounge."

This seems to be a description of a procedure not unlike that which Pan American had abandoned at least a year earlier except that the match was administrative rather than physical.

That such a procedure was in operation for a considerable time at Heathrow prior to the introduction of the x-ray only policy seems to me to indicate that it was a reasonable precaution at least for Heathrow airport. Mr Anderson accepted this, but argued that this did not mean that it would have been reasonable at Frankfurt. We had heard no evidence that the procedures at Frankfurt prior to 1988 were similar to those at Heathrow or that they included a similar system of reconciliation. He submitted that apart from the procedures operating at Heathrow prior to 1988, reconciliation in general was not directed at identifying all unaccompanied bags but was aimed at the no-show passenger. Accordingly, it was probable that at Frankfurt any reconciliation procedure was triggered by the no-show passenger.

I am satisfied on the evidence of Mr Sonesen and Mr Berwick that it is probable that the procedure for interline baggage at Frankfurt prior to the x-ray only policy was similar to that at Heathrow and complied with Section 15C (1)(a). This seems to me to be supported by the evidence that Mr Huebner shared Mr Berwick's misgivings as to abandonment of a positive reconciliation in relation to interline baggage. In view of the fact that Section 15C (1)(a) applied to Frankfurt as well as to Heathrow, I consider that a positive reconciliation procedure similar to that formerly existing at Heathrow was a reasonable precaution for Pan American to have taken at Frankfurt.

Might such a procedure have prevented the disaster? I consider that it is probable that the presence of an unaccompanied bag would have been detected by such a procedure and that, had it been physically searched, the explosive device might well have been discovered. As I understood him, Mr Anderson's submission that reconciliation at Frankfurt would not have prevented the accident was based on the probability that such reconciliation would have been directed at the "no-show" passenger. I reject that argument. Accordingly I have made finding (17) to the effect that the abandonment at Frankfurt of the x-ray only policy in favour of a positive reconciliation procedure in relation to interline baggage similar to that which was

operated at Heathrow prior to 1988 was a reasonable precaution which might have prevented the deaths.

Turning to the procedure of the tarmac transfer at Heathrow, I have already indicated in my answer to Question (11) above that Section 15C (l)(a) of the ACSSP applied to baggage involved in such a transfer and that this showed that the FAA considered that some form of positive reconciliation was reasonably practicable. I reject Mr Berwick's statement (Notes 3267) that there was no requirement for verification and that bags were allowed to be transferred from one plane to the other without screening. I have had regard to the opposition of Mr Harris, Mr Jack and Mr Sonesen to a system of tarmac reconciliation or counting of bags and to the fact that the only change made in the tarmac transfer procedure after 21 December 1988 was that the transferred bags were screened by x-ray and there was no attempt at reconciliation. On the other hand it is clear from the evidence of Mr Jenkin (Notes 2866) and Mr Berwick (Notes 3268) that the number of bags to be transferred was known and counting would have been possible

I have come to the view that so long as there was no reconciliation of interline bags at Frankfurt which would have disclosed the presence of an unaccompanied bag, it would have been a reasonable precaution to have had some form of reconciliation of the bags transferred on the tarmac at Heathrow, either by counting or by a physical reconciliation. In a situation where Pan American knew, or ought to have known, that the x-ray only procedure at Frankfurt would (a) fail to disclose the presence of an unaccompanied bag and (b) might well fail to detect the presence of an explosive device in an interline bag, I do not consider that they were entitled to rely on the Frankfurt procedures as obviating the need for further security checks at Heathrow. I accept, however, that once the procedures at Frankfurt were tightened up so as to disclose the presence of an unaccompanied interline bag whether or not there was a "no-show" passenger, the x-ray screening introduced after December 1988 might be a sufficient additional check at Heathrow.

The question therefore comes to be whether such a reconciliation might have prevented the disaster. I have had due regard to the doubts of the efficacy of a count of bags in identifying an unaccompanied bag but I think I am justified in holding that a count of the bags on 21 December might have disclosed the presence of an extra bag and caused the Samsonite suitcase to have been identified and searched. A physical reconciliation would probably have identified that suitcase and so prevented the disaster.

I have therefore made finding (18) to the effect that a security check designed to identify unaccompanied bags among those transferred from Flight 103A to Flight 103 was a reasonable precaution which might have prevented the deaths.

It is proposed to deal at this stage with Mr Baird's submission that the abandonment of reconciliation in relation to interline baggage and the tarmac transfer of online baggage without any security check was a defect in Pan American's system of working in terms of Section 6(1)(a) of the Act. The essential difference between findings in terms of paragraph (c) of Section 6(1) and paragraph (d) is that the former can be made if the stated precaution "might have" prevented the accident, while in the latter case the defect in the system must have "contributed to the deaths".

My original conception of Section 6(1)(d) of the Act was that it related primarily to inquiries into deaths in the course of employment. It reflects the duty of an employer to provide his employees with a reasonably safe system of working and such a duty is not generally founded upon in relationships outside that of employment. But I am now persuaded that the words "in any system of working" must be construed widely enough to cover situations other than deaths in the course of employment. In any event¹ the members of the crew of Flight 103 died in the

course of their employment and it is open to me to consider Mr Baird's submission on that basis.

The reliance on an x-ray only policy and the absence of any positive reconciliation in relation to interline baggage at Heathrow and Frankfurt was to my mind a defect in Pan American's system of working. As I have indicated above, it is probable that had that defect not existed at Frankfurt the unaccompanied bag would have been discovered. In that situation I am prepared to hold that the defect contributed to the deaths of the members of the crew and, in consequence, to the other deaths with which the Inquiry is concerned, as set out in finding (19).

I have omitted any reference in that finding to the absence of any security check in relation to the tarmac transfer. While this may well have been a defect in the system of working, I am not prepared to go beyond what I have said above as to the extent to which some form of reconciliation might have prevented the disaster. Accordingly, I am not prepared to hold that such a defect contributed to the deaths.

Having dealt with these matters, I return to Mr Baird's list of proposed findings at number (16). He suggested a finding that there were serious inadequacies in the record-keeping so that when flight 103 took off the operator did not know how many passengers, crew or bags there were on it. He referred to the inaccuracies in the Productions 49, 102, 116, 141 and 149, in relation to the number of bags being carried, the number of infants being carried and the number of crew. Mr Anderson submitted that Productions 47 and 141 were produced at a time when a corrected list had not been requested. The inadequacies in the list were not serious. Miss Milne said she had intended to print a better version of Production 141 but other tasks had intervened. There had been no hindrance to police inquiries and the inaccuracies had no relevance to the circumstances of the deaths.

While I accept that Productions 47 and 141 were perhaps not intended to be final lists, I did not understand Miss Milne to suggest that the list she intended to draw up later would have incorporated any different information. As I understood her, she intended to produce a properly printed version. Mr Basuta's name would still have appeared, the presence of one infant would not have been recorded, and the number of bags would not have been altered. The correct number of crew was, as I understood the evidence, stated on the list left by the purser so that the Operator knew how many crew were aboard. While I recognise that inaccuracies in the passenger manifest would make it more difficult to give accurate information to relatives after the disaster, I am not prepared to find that the inaccuracies in this case were relevant to the circumstances of the deaths.

Mr Baird's proposed finding (17) was to the effect that Alert had failed to provide adequate security through poor staff, underfunding, lack of training and lack of support from Pan American. He referred to Mr Ford's statement of the aims of Alert and to the evidence relating to resentment of the Pan American Board and the withdrawal of the unlimited funds originally promised, the training at Frankfurt and Heathrow, and the inadequacy of staff. Mr Anderson submitted that none of the criticisms of the Alert programme were relevant to the circumstances of the deaths. There was no evidence that any one at Heathrow was not doing their job. Their pay was comparable to that of other security operators and at Frankfurt it was significantly higher. There was no evidence that Alert were being allowed to wither. Mr Berwick was impressed by the calibre of the Frankfurt personnel and Mr Ridd in 1989 found only a few of them to be incompetent.

I take the view that in assessing the adequacy of the Alert programme, it is unhelpful to look at the publicity surrounding its institution or to measure the performance against the very high standard which was originally envisaged. As indicated above, I accept that the original concept of an organisation which would devise and execute a security service of a standard higher than that of any other US airline was abandoned and with it the ambitious training programme, but

it does not follow that the service provided was inadequate by normal standards. I heard no evidence to suggest that in any specific area the staff of Alert were any less competent than employees of any other security contractor. They were not responsible for any deficiencies in the procedures they were required to operate. I should also say that while I reject the submission that the Pan American Board resented the operation of Alert, it is clear that the Corporate Security Division did so and withheld its support. I doubt if there was any direct evidence before me that there had been no training at Frankfurt. Mr Wood only said that he had been told this by Mr Shaughnessy who is, I understand, one of Pan American's attorneys. So far as training at Heathrow was concerned, it seems clear that all original employees of Alert received an intensive three day course and that those taken on thereafter received on the job training and one day of lectures and video instruction. I am not prepared to hold that this was inadequate. I accept that both Mr Berwick in his message to Mr Sonesen (Production 100) and Mr White in his evidence expressed misgivings as to the competence of some of the x-ray screeners but there is no evidence that they were any worse than those of other companies.

In all the circumstances, I am not prepared to make a finding which might imply that the Alert performance was generally less than adequate or that any shortcomings on the part of their staff were relevant to the circumstances of the deaths.

Proposed finding (18) related to the absence of a proper and adequate system of communication of security information between Pan American and Alert. I have already commented on this matter above in considering the relationship of Pan American and Alert and I would repeat that while there was little or no communication at headquarters level there was an adequate system at airport level. The question of how it was used is another matter. In any event, I am not persuaded that any failure of communication was relevant to the deaths.

Proposed finding (19) is that there was no effective system of monitoring the performance of Pan American and Alert, either internally, or by the regulatory authorities. The evidence was to the effect that internal monitoring was the responsibility of the Regional Security Controller. I was, however, somewhat disturbed to discover that while Mr Sonesen considered that Mr White covered London Heathrow in December 1988 (Notes 5698F), Mr White excluded Heathrow from the stations for which he was responsible (Notes 2703B). It was also significant to my mind that if a Regional Security Controller discovered a defect in a security operation he did not report this to Corporate Security in New York. Accordingly, I think Mr Baird is justified in claiming that there was no effective internal monitoring of their security system by Pan American at Heathrow. With regard to Frankfurt, Mr Huebner appears to have been concerned from time to time about the security performance there and to have expressed that concern to Corporate Security without any result. I have been unable to trace the passage in Mr Wood's evidence founded on by Mr Baird as showing that there was no internal monitoring at Frankfurt. In any event, I consider that the evidence shows that such monitoring as there was proved ineffective in achieving any improvements in the system, but I am not persuaded that the lack of internal monitoring has any relevance to the circumstances of the deaths. The question of external monitoring will be more conveniently dealt with when considering the position of the Department of Transport.

Mr Baird's final proposed finding in terms of Section 6(1)(c) was to the effect that had Pan American followed the FAA requirements in respect of Mr Basuta's bag the delay involved might have resulted in the explosion of the device on the ground or at a lower altitude which might have prevented the deaths or some of them, and particularly those of the residents of Lockerbie. This submission was supported to some extent by Mr Kavanagh. I am not persuaded that had it been decided at 1800 hours on 21 December to start to search for Mr Basuta's bag there would have been a substantial delay. The evidence was to the effect that Mr Basuta arrived at the gate shortly after 1800 hours. In that situation, had the aircraft not left the ramp, I consider that Mr Basuta would probably have been allowed to join the aircraft and the delay to the departure from the ramp would have been minimal even if unloading had

started. It is doubtful whether, in these circumstances the take-off time would have been delayed. In any event, I consider that it is difficult in the absence of any expert evidence to hold that an explosion at a lower altitude would have resulted in fewer deaths among those aboard the aircraft than in fact occurred. While even a short delay might have prevented the deaths of the residents of Lockerbie, I think it would be unfortunate if I were to make a finding to that effect when the result might have been a similar or possibly greater number of deaths elsewhere. In all the circumstances I am not prepared to make a finding in the terms proposed by Mr Baird.

I turn now to consider the position of the Department of Transport. The submissions of Mr Hardie, Mr Gill, Dr Swire and Ms Larracochea seem to me to raise the following questions in one form or another:

- (1) Did the Department take sufficient steps to encourage the use of technology in the field of aviation security which was, or could have been available, in December 1988?
- (2) Might a separate inspectorate with an adequate inspection system have avoided the deaths?
- (3) Did the circulars and directions issued by the Department provide a reasonably sufficient safeguard against the carriage of an unaccompanied bag containing an explosive device?
- (4) If not, would it have been a reasonable precaution to have issued a direction clearly requiring a positive baggage/passenger match in relation to all transfer baggage at Heathrow, including that involved in a tarmac transfer?
- (5) Was the Department of Transport the appropriate body to act as the lead agency in aviation security? If so, had it adequate resources to act as such?
- (6) Did the Department react adequately to the Toshiba and Helsinki warnings?

- (1) Encouragement of use of technology.

This question was raised by Dr Swire and Ms Larracochea and they founded largely on the evidence of Professor Wilkinson and Production 32 which is a pamphlet referring to the use of back scatter x-ray by the Japanese in airports in May 1986. The professor's evidence was, to my mind, directed less at what equipment was available in 1988 than at what should have been available had what he regarded as the necessary resources been allocated by the Government to research and development in this field. That is a political question which I am not prepared to discuss. As to what was available, I prefer the evidence of Mr Doney as to the practicable availability of the various techniques referred to for large-scale use at airports. I am not persuaded that the Department could reasonably have done more to encourage or enforce the use of the machines mentioned at British airports.

- (2) Might a separate inspectorate, with an adequate inspection system, have avoided the deaths?

Mr Gill argued that the Department had been warned by the Select Committee in 1986 that their inspectorate was "woefully inadequate" and the Committee recommended a separate inspectorate. He submitted that if the Department relied on the ACSSP to impose a stricter regime on US airlines than they did they were obliged to ensure that such a regime was being followed. But they neither monitored Pan American's compliance nor obtained copies of FAA inspection reports. They had no system for carrying out inspections. A properly funded and manned inspectorate would have detected the existence of the x-ray policy for interline baggage and so have appreciated the risks involved in the tarmac transfer. In fact, the Department had failed to detect the absence of any reconciliation of interline baggage during one inspection in March 1988 and so failed to appreciate the risks of the tarmac transfer if there was a similar system in operation at Frankfurt. Mr Hardie contended that the Department was inadequately funded and referred to Mr Jack's evidence (at page 4609 onwards) of four requirements for an

adequate inspection system which were not met prior to December 1988. He asked me to consider whether an inspectorate, properly funded, might have avoided the disaster

Mr McEachran pointed out that between April and November 1988 there had been 136 inspections at British airports, including 39 at Heathrow (Jack 4580). The FAA inspectors had visited Heathrow only once between March and December 1988 and normally visited only once or twice a year. Was there any evidence that it would have been reasonable in 1988 to have had a larger complement of inspectors? A bigger agency like the FAA did not inspect any more often than did the Department. Would more inspectors and more inspections have picked up the breaches of the Department's requirements? Neither the Department nor the FAA had detected them in 1988. Only if an interline passenger failed to show at the gate while the inspector was there would a breach of those requirements have been obvious. Accordingly, there was no evidence that a separate inspectorate with more inspectors would have (a) detected the lack of reconciliation of interline bags at Heathrow (b) deduced that the system at Frankfurt was similar; and (c) recognised the risk involved in the tarmac transfer, as claimed by Mr Gill. The FAA had been no more successful in detecting breaches of the ACSSP.

While the resources available to the aviation security division of the Department in 1988 were insufficient to allow it to provide an adequate system of inspection, I am not prepared to find that a separate inspectorate with an adequate system might have prevented the disaster. I am satisfied that even if its establishment of seven aviation security advisers who were part-time inspectors had been filled, that would not have been sufficient to carry out a reasonable system of inspection of over 50 airports and about 230 airlines. The most they could hope to do, in my opinion, was to visit each of the major airports reasonably frequently, with a specific purpose or a particular airline in mind, and ask questions about the procedures being followed without inspecting every aspect of the operation. I consider I am entitled to take this view from the evidence of Mr Jack and Mr Harris that the Department did not see itself as performing a policing role, or as differentiating between the inspection and advice aspects of a security adviser's role. It further seems to me that in instituting prior to December 1988, a project designed to produce a better system of planning inspections and recording the results of them, the Department recognised that the system which they were then operating was inadequate and that a more systematic monitoring of the performance of airlines and airports was necessary. I am also of the view that such monitoring would probably involve the division of duties formerly performed by the security advisers, so as to form a separate inspectorate as recommended by the Select Committee. However, I am not prepared to hold that such an inspectorate, if it had continued to confine itself to monitoring compliance with the Department's directions and circulars as interpreted by the Department, might have prevented the disaster. In the first place, I consider that a member of such an inspectorate might have appreciated that interline baggage was being x-rayed by Pan American at Heathrow. I do not see why he should have appreciated that this involved the abandonment of any reconciliation procedure. On the Department's interpretation of its directions, he would only be concerned with reconciliation in the event of the failure of an interline passenger to board the aircraft and it is unlikely that this would occur during his inspection. In any event, I do not accept Mr Gill's submission that an inspector should have applied his mind to the question of whether the interline procedure at Frankfurt was the same as at Heathrow and so have appreciated the risks involved in the tarmac transfer. Only if he had done so might he have taken steps which would have avoided the disaster.

In these circumstances, I am not prepared to find that a separate inspectorate, or a more effective inspection system, might have prevented the accident, so long as the Department continued to regard reconciliation as a precaution aimed at the "no-show" passenger.

(3) Did the Department's recommendations provide a reasonably sufficient safeguard against the carriage of an unaccompanied bag containing an explosive device?

I approach this question on the basis that I am satisfied on the evidence that a system of reconciliation which depended on the failure of a passenger to appear at the gate would probably not disclose the presence of an unaccompanied bag containing an explosive device. As I have already said, I consider that a person who had introduced such a bag into the system of a particular airline by interlining into a particular airport would be unlikely to check in with the airline at that airport and then fail to appear at the gate. To do so would be to draw the attention of the airline to the fact that the bag was unaccompanied and so risk the discovery of the device. In these circumstances the direction of August 1985 (Production 71) would have been ineffective as a means of identifying such a bag as would the circular of 6 July 1987 (Production 64). The circular (Production 21/1), had it been implemented according to its terms, might have resulted in an unaccompanied bag being discovered during the tarmac transfer and should have resulted in such a bag being discovered among interline bags at Heathrow. But it is clear that it was not so implemented by Pan American and no steps were taken to persuade them to do so, due to the interpretation put on it by the Department and its inspectors. Accordingly, the Department's policy in regard to reconciliation failed to provide protection against an extra bag either in the interline system at Heathrow or in the tarmac transfer.

(4) Would it have been a reasonable precaution to have issued a direction clearly requiring a positive baggage/passenger match in respect of all transfer baggage at Heathrow, including that involved in a tarmac transfer?

Mr Hardie submitted, as I understood him, that this would have been a reasonable precaution, as did Mr Gill. Mr McEachran submitted that the Department was entitled to rely on measures taken in another state as far as security of baggage is concerned. He claimed that this was the effect of the concept of host state responsibility. I confess that I had understood from the evidence that this concept placed the responsibility for regulating security in relation to departing flights on the country from which they were departing, rather than placing the responsibility on the country from which a particular piece of baggage originated. If Mr McEachran is right, then the United Kingdom was responsible for the safety of Flight 103 only in so far as it was threatened by baggage originating in this country, but not when the threatening bag originated elsewhere. I am not prepared to accept this argument. It seems to me that host-state responsibility implies that the state from which a flight takes off has the duty to consider what precautions are necessary in relation to that flight and cannot rely on the efficiency of security procedures elsewhere without checking on what these procedures are. But Mr McEachran also submitted that it would not have been reasonable to expect a positive reconciliation of tarmac transfer baggage. He argued that this would be similar to suggesting that all the baggage of passengers who remained in an aircraft as it went through Heathrow should be examined. No evidence had been led to show how "effective passenger/baggage reconciliation" would work as applied to London Heathrow or countrywide or how feasible it would have been in 1988. The witnesses Harris, Jack and Sonesen set their face against tarmac reconciliation or counting of bags. The court should not substitute its lay view for that of the experts.

I accept Mr McEachran's point that the feasibility of a country-wide direction is quite different from the practicability of requiring positive reconciliation of bags being transferred from one particular flight to another. But I do not see why any such direction need be country-wide in its application. It could, as I see it, be issued for Heathrow only, or restricted to certain airports and to these flights where tarmac transfers are permitted. I think I am entitled to infer that the number of such flights at Heathrow would be similar, if not identical, to those for which a dispensation as to hand baggage was provided in the circular which is Production 66.

In these circumstances, I am not prepared to assess the feasibility of positive reconciliation on the basis that it must be applied countrywide or not at all. It has been found feasible to x-ray tarmac transfer baggage. I cannot see why it should not have been equally feasible in 1988

to count the bags by a “clicker” as Mr Hardie suggested and Mr Jack appeared to consider was at least possible.

However, before I can make a finding on this matter in terms of Section 6(1)(c) of the Act, I must be satisfied that such a direction might have prevented the deaths. I have come to the view that on all the evidence it is unlikely that it would have done so. If Section 15C (1)(a) of the ACSSP did not persuade Pan American to carry out a positive reconciliation of tarmac transfer baggage at Heathrow, I doubt if a direction in similar terms from the Department of Transport would have done so. All the evidence is that Pan American knew that there were UK requirements which were binding on them but that they paid scant regard to them on the basis that the ACSSP rules were likely to be more stringent and that compliance with the latter would involve compliance with the former. For that reason, I have declined to make a finding that the issuing of such a direction was a reasonable precaution which might have prevented the deaths. On the other hand, I think I am entitled to find under Section 6(1)(e) that the Department’s directions and circulars, as interpreted by them, did not provide reasonable protection against an undetected unaccompanied bag being transferred to Flight 103. I consider that fact to be relevant to the circumstances of the deaths, and in these circumstances, I have made finding (20).

(5) Was the Department of Transport the appropriate body to act as the lead agency in aviation security? If so, had it sufficient resources to act as such?

I consider the first question to be a political one and I am not prepared to comment on it. In regard to the second question I do not wish to add anything to my comments in answer to Question 2 above indicating that the Department had insufficient resources to attempt to enforce compliance with its regulations.

(6) Did the Department react adequately to the Toshiba and Helsinki warnings?

Mr Jack said that he first learned of the finding of an improvised explosive device in a Toshiba radio cassette player from the security services on 17 November 1988 and then received the FAA bulletin on 18 November. He did not know what procedure the FAA had for notifying individual US agencies of information but he assumed that US airlines operating in the United Kingdom would have received the bulletin. The Department of Transport normally advised the major British airports that a bulletin was on its way. On receipt of the bulletin on 18 November Mr Jack passed on its contents to the British security services and asked them to assess the threat and its potential targets. He accepted that it might be directed at airports and civil aviation. On 22 November 1988 he received some information from the security services and decided to issue a warning to United Kingdom airlines and airports. This was done by telex (Production 68). It described the device and indicated that it would be difficult to discover by x-ray. It also stated that he would hope to send out further information as to the device, including photographs and the area of threat. He did not recommend any action because he had no material on which to judge how far any threat remained after the discovery of the devices and the arrests made but he indicated that screening staff should be informed of the position.

On 8 December 1988 he saw a German pamphlet containing coloured photographs of a Toshiba radio cassette player bomb and he selected three of them to be copied and sent out with a further circular. He “initiated a bid” to have these reproduced by the Department. He was frustrated by the delay in producing the photographs but also by the lack of any assessment of the area of threat from the security services. In the event, he decided to draft a circular to be sent out whenever the photographs became available. This was dated 19 December (Production 69) but it was not sent out until the second week in January 1989. Had the photographs become available before 19 December he would have issued a circular there and then. The reasons for the delay in producing the photographs appear to have been (1) this

was the first occasion on which the Department had circulated photographs with circulars and there were doubts about the best procedure; (2) mistakes were made in the procedure for affixing captions to the photographs; (3) by the time the photographs were ready for reproduction it was close to the Christmas holiday and it was considered that they should not be sent to a private firm for processing until after the holidays for security reasons;

(4) Mr Jack and Mr Harris each left it to the other to impress the urgency of the matter on the administration section.

Mr Hardie suggested that while there was no evidence to the effect that immediate distribution of the photographs might have avoided the accident, I might wish to comment on the delay which in fact occurred. Mr Gill's submission was to a similar effect. Mr McEachran argued that in suggesting that the information should be passed on to security staff, the Department had gone further than the FAA in this matter and Mr Jack had good reasons for not sending his first circular to US airlines. He had been criticised because of the delay in implementing a decision to circulate photographs, which was a step nobody else had thought of taking.

I consider that Mr Jack responded with reasonable promptness in issuing his telex of 22 November and that he was justified in restricting it to British airlines and airports when he knew that the FAA had issued its own bulletin. Had he realised that Pan American, in its Task Force Wire to its own security staff would withhold a good deal of the information contained in the FAA bulletin, he might have reconsidered that decision.

The delay in circulating the photographs was most unfortunate but it was a new activity for the Aviation Security division and perhaps hitches were inevitable. I can understand Mr Jack's wish to include in the second circular information as to the area of threat which he had hoped to provide along with the photographs. It is ironic that the delay in sending out the photographs for reproduction was unjustified because the process took only six hours and could have been completed before the Christmas holidays.

I do not propose to say any more on this matter or to make any finding in regard to it, because I do not consider it relevant to the circumstances of the deaths.

In regard to the Helsinki warning, Mr Jack said that he received the FAA bulletin and on 12 December passed on the information contained therein to the British security services for their evaluation of the threat. He did not himself evaluate its credibility. He did not consider any action necessary as he knew that US airlines and, in particular, Pan American had been informed of the warning. The assessment of the security services that the warning had little credibility was passed to the Department on 23 December 1988.

Mr Gill submitted that Mr Jack should have given an interim warning, and should have chased up the security assessment. His reaction contrasted with that of the FAA. He should, in any event, have ensured that security at Heathrow was as effective as possible. Mr McEachran submitted that Mr Jack was justified in regarding the absence of a report from the security services as indicating the absence of any serious threat.

There was no evidence before me to suggest that this warning should have been accorded any degree of credibility and I do not consider that the fact that the FAA took action in regard to it alters that position. Even if it were to be given credence its specific nature meant that measures to meet the threat posed by it should also be specific. I agree with Mr McEachran's submission that in the circumstances Mr Jack was entitled to rely on the absence of an urgent assessment from the security services as an indication that the threat was not serious, at least as far as the United Kingdom was concerned. In all the circumstances, I do not consider that any action by the Department was called for.

Having examined the submissions made in relation to Pan American and the Department of Transport, I turn to the positions of Alert and the British Airport Authority. I do not think it proper to make negative findings in my determination and would only comment that there was no evidence which persuaded me that either of these organisations or their employees contributed to the occurrence of the disaster in any way.

I now turn to matters on which it was suggested that I should comment in this Note. Ms Larracochea was concerned throughout the Inquiry with the fact that information about the Toshiba warning and the Helsinki warning had not been made available to the public and, in particular, the crew of the aircraft. In the case of the Helsinki warning, she was particularly concerned that staff of the US Embassy had been told of it and given an opportunity of changing their travel plans. She had hoped to obtain from Pan American during the Inquiry, booking lists which might have shown that bookings on Pan American flights had been cut during the relevant period because staff had taken that opportunity, but these were not made available. However, she founded on Productions 26/4, 26/5 and 26/6 as showing that a large number of persons had changed their bookings to other airlines. In that situation, she claimed that Pan American had an obligation to publish details of the warning to the public and to their employees.

I have found it difficult to put these productions in chronological order but it seems to me 26/4 came first in time, followed by 26/6 and then 26/5. In none of these messages is it stated at first hand that there was a wholesale switch of bookings. Mr Huebner's message (Production 26/4) passes on a report from Moscow that about 80% of the holiday traffic from the embassy were re-booking, but does not state that as being within his own knowledge. Mr Sonesen then sends a message to Moscow (Production 26/6) asking for details of lost revenue and Moscow replies saying simply that many were trying to change to other airlines. I do not regard that as concrete evidence that a substantial number of passengers due to fly on Flight 103 did in fact cancel their bookings. Ms Larracochea led the evidence of one witness who had tried to book a special student flight on Flight 103 on 21 December 1988 but had been told none was available. I do not accept this as evidence that at one time the aircraft as a whole was fully booked and that a large number of passengers later switched to other airlines or other flights. The only witness who suggested that crew members should have been told of the warning was Miss Lardy, who assented to a leading question to that effect. On the other hand, Captain Smith, a witness led by Dr Swire, was clear that a threat contained only in a telephone call should never be made public. Ms Larracochea founded upon a passage in the evidence of Professor Wilkinson to the effect that a threat should be made public only if an airline felt it could not be met by specific security measures and if it was felt necessary to inform its own employees or state employees of the threat. While it is true that the FAA bulletin was made public in the Moscow Embassy, I am satisfied that this was an unofficial and unauthorised publication. The bulletin itself said that it was being circulated to embassies for passing on to security personnel at airports and that it was not to be communicated to anybody else. Accordingly, I do not think the situation envisaged by Professor Wilkinson arose. In all the circumstances I reject the contention that Pan American had a duty to pass on this information to their flight crews or to the public.

Ms Larracochea asked me to suggest that a further judicial inquiry should be held to deal with such matters as the operation of the international security network in relation to aviation security; the passing of information on threats to a privileged few; the Helsinki threat itself; and Pan American's bookings, but I am not prepared to do so.

Dr Swire suggested that I might wish to comment on Captain Smith's remark that an airline which delayed a flight for security reasons was penalised by being relegated to the end of the queue for take-off slots. In the absence of any evidence as to the feasibility of giving such a flight some degree of priority in the queue, I have no comment to make.

Finally, I must turn to the suggestions made by Mr Gill and others as to the aftermath of the Lockerbie disaster.

I heard evidence from a number of relatives of the victims who expressed concern, and sometimes stronger feelings, about their treatment at Lockerbie in the aftermath of the disaster, which had added to their distress. It is only fair to say that their intention was less to criticise the actions of the authorities than to suggest how plans for future emergencies could make better provision for the support of relatives and the avoidance of unnecessary distress to them. They fully recognised the strain under which all the agencies involved were working and were appreciative of what had been done for them.

I had some doubts as to whether these matters could properly form a basis for findings in fact "relevant to the the circumstances of the deaths" but as the Crown had specifically devoted part of its evidence to the operation of the emergency services immediately following the disaster, I decided that I must give them due consideration. I appreciate, however, that the Crown evidence was mainly directed at showing that no failure on the part of the emergency services had contributed to any of the deaths.

One concern which was expressed by a number of witnesses related to the exclusion of the relatives from the process of recovering the bodies and identifying them. This was most vividly expressed by Mr Coker whose twin sons were among the victims. He spoke of his strong desire and sense that it was his paternal duty to see the bodies of his sons and participate in their identification and how his exclusion from that process was very disturbing to him. He said that those carrying out the investigation must bear in mind that each of the people killed was somebody's loved one. "The twins were my sons, not Pan American's sons and not the sons of the Scottish police", he said. Ms Larracochea said it must be appreciated that each relative was an individual with individual needs in relation to viewing the body, knowing the exact position where it was found, and the personal property of the deceased. Other relatives spoke of their regret and resentment that they had not been given the opportunity of seeing the bodies of their loved ones. Professor Rachel Rosser, who has been studying the psychological consequences to those bereaved in a disaster, gave evidence that if relatives were given the option of seeing and touching the bodies or even the partial remains, the incidence of what she termed pathological grief could be reduced.

In considering this matter, I must take as my starting point the decision of the police to proceed from the beginning on the basis that they were probably dealing with a criminal act of mass murder. That decision was fully justified and the consequence was that the requirements of the criminal investigation had to take priority over the wishes and instincts of the relatives. It followed that once the decision was taken that nobody who had been aboard the aircraft was likely to have survived, the bodies had to be recovered systematically after life had been pronounced extinct in the presence of police witnesses and photographs had been taken. At the same time, a meticulous search for evidence was carried out over a wide area and until a particular location had been thoroughly scrutinised, relatives had to be excluded from it and could not be shown where the bodies of their loved ones had been found. In a situation where so many of the bodies had been mutilated, I can well understand the decision of the Crown that visual identification by relatives in the form of attempting to pick out one body among those which happened to be in the mortuary at the time, should not be included in the identification process. Accordingly, I would not be prepared to make a finding that this was an unreasonable decision which caused unnecessary distress to the relatives. While I fully appreciate Mr Coker's feelings, I consider that until his sons had been identified and all the possible evidence afforded by their bodies had been noted, they had to be under the control of the police and the prosecuting authorities. The suggestion of Professor Busuttil and Dr Jones in their paper (Production 708) that when the identification of a victim is complete or nearly so, a relative might be invited to confirm it by looking at a photograph and, if desired, viewing the body in isolation from others is worthy of consideration but it depends upon suitable accommodation

being available in close proximity to the mortuary. The question of how, and in what circumstances relatives should be given the opportunity of viewing bodies which have been identified and released for burial is another matter. I can well understand Mr Coker's anger that a representative of Pan American should be involved in discussions with the undertakers in a matter of this kind. I think that, standing the evidence of Professor Rosser, undertakers involved in any future disaster might consider reviewing their procedures on this point, although it is clear that careful counselling of relatives would have to be part of any decision as to whether they wished to view the bodies and of preparing them to do so.

Mr Gill, in his careful and tactful submission on his clients' position, suggested that future plans should provide for the earliest possible establishment of lines of communication with the next-of-kin followed by the appointment of a representative for all the relatives who would have official status. He or she should have the fullest access to information as and when it became available and be authorised to pass it on to those relatives whom it concerned. Such a system might also spare the relatives from having to deal with a multiplicity of officials, particularly in providing intimate physical descriptions of those whom they have lost.

I consider that to be a most valuable suggestion, my only reservation being that I doubt if a single person could be the sole channel of information for a large number of relatives. It might be necessary to have two or three representatives but, if so, I think it important that each relative knows which representative is to be his point of contact with the authorities and local agencies.

In relation to Mr Kavanagh's suggestion that I should press for urgent action in relation to the programme of research recommended in the report of the AAIB Inspectorate I think that this matter borders on the political field and I am not prepared to accept his suggestion.

In conclusion, I would like to express my appreciation of the manner in which all those involved in the Inquiry dealt with the evidence and presented their submissions. Above all, I would thank the Clerk to the Inquiry and his court staff for the way in which it was organised and managed.